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MARCH, 1921

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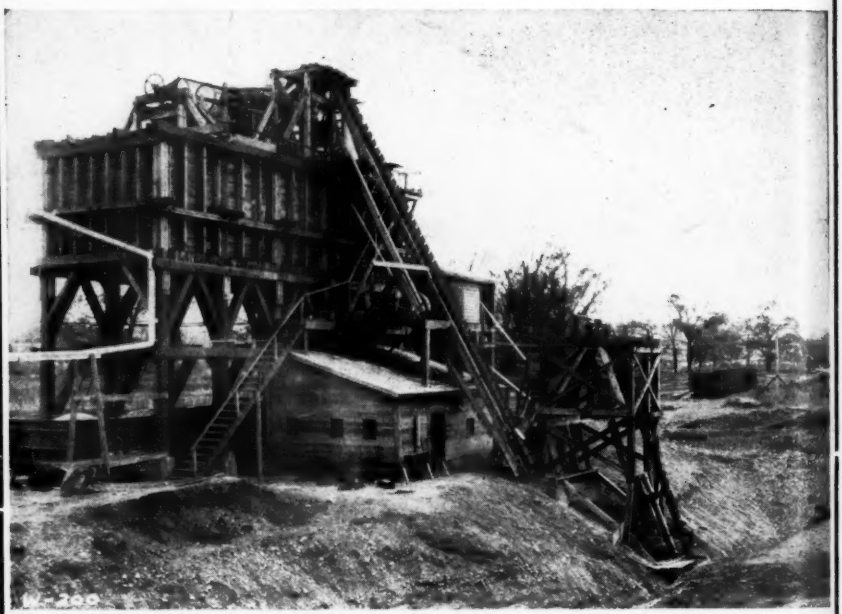
WEBSTER



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Pit and Quarry

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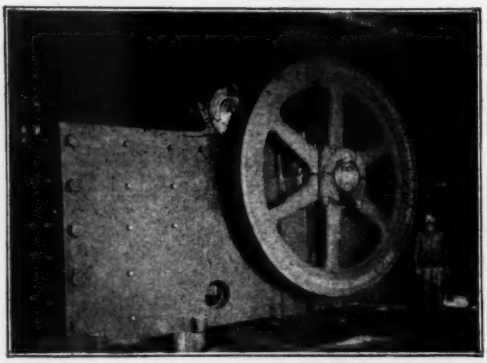

and that's not only a claim but a fact. **All** our crushers, no matter whether they are of the "Panel" or "Box" side frame types, are built throughout of the best quality, thoroughly annealed, heat treated, open hearth steel, which combined with the infinite care of Buchanan design and construction accounts for the great length of life and high crushing efficiency of

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Pit and Quarry

Vol. 5 Chicago, Ill., March, 1921 No. 6

E. J. KRAUSE

Prominent St. Louis Stone Producer elected President of National Association at Toronto Convention

Lively Meeting at Toronto

Stone Association to Increase Membership and Preserve Own Identity —Traffic Committee Reports

By NEWELL D. ELY

IT is hardly necessary to say that the rate question is still an all-absorbing subject to stone producers; and as may have been expected, the high spot of the Crushed Stone Association's convention at Toronto, February 7, 8, and 9, was Mr. P. C. Hodges' report of the traffic committee, and the resulting discussion. Mr. Hodges was not present at the convention, and his report was read by Mr. A. P. Sandles, the secretary of the association.

Mr. Hodges stated that he, together with other stone men, had reliable information that the interstate commerce commission, in granting hearings to the stone men, had no intention of changing their course of action, which had already been decided upon. It was because of this information, according to the report, that the traffic committee determined not to expend any large amount of money on what they felt was a hopeless case.

The report was pessemistic, also, regarding car supply in 1921. It is the belief of the committe that, should business boom as is expected in many quarters, the Interstate Commerce Commission will again be compelled to assume control of the situation, and priority orders will again obtain. If this condition should come, it is not unreasonable to assume that the coal interests will again be the favorites, and unless the stone men want to go through another year like 1920, some concerted action should be taken without delay.

In this connection it was interesting and very instructive to hear the way in which the Canadian producers met a similar situation, and averted a 40 per cent rate increase.

Before their case was presented to the Dominion Railway Commission, it was prepared by a man skilled in such matters, and he was given all the information he needed to make a convincing case. The writer went over the case as it was presented by them, and it was not hard to understand why they were successful. Everything was down in black and white, to the smallest detail of cost, value, length of haul, tonnage and comparison of rates, with comparative values of different commodities. It was presented in a clear, concise manner that even a congressional commission could not fail to understand—and it won the case.

Their success was due in a large measure, also, to the testimony of provincial and county highway officials, who stated that if freight rates were raised, they would cease buying commercial stone, and would open local quarries. This is actually being done today, in the States, and should prove a strong argument for rate reduction, for it will prove that the railroads actually reduce their revenue by raising the rates on pit and quarry products.

Toronto's Cordial Welcome

The convention was called to order at the King Edward hotel by President Rice, who introduced the Honorable T. L. Church, Mayor of Toronto. Mr. Church gave a short address of welcome to the stone men from the States, and expressed keen interest in the activities of the association. He extended

to the delegates the freedom of the city, and was warmly applauded.

Mr. W. H. Alderson, president of the Toronto Board of Trade, was next called upon, and gave a short pithy talk on general business conditions. He invited the visitors to the Board of Trade and many took advantage of the invitation.

Mr. J. F. Stewart, of the Point Anne Quarries, Ltd., Toronto, was the next speaker. Mr. Stewart declared in opening that Americans were, of course, greatly handicapped by their form of government, and pointed out that for real freedom, one must live under a monarchy. This remark was greeted by a storm of 18th amendment applause.

Mr. Stewart then emphasized the close and warm relations existing between the United States and Canada, calling attention to the more than one hundred years of peace between them, and the 3,000 miles of borderline without a fort or an armed guard. He expressed the belief that the United States and Canada, both having in a large sense the same ideals, and working shoulder to shoulder, will interpret American thought.

President Rice and Vice-president Krause responded with short addresses of appreciation.

Production Costs Compiled

Although president Rice was not satisfied with the response he received regarding production costs, nevertheless he compiled the returns he did receive, making a mighty interesting report. It was evident that costs varied considerably in different localities, but no one was prepared for the wide differences shown by Mr. Rice, which in some cases showed as much as 300 per cent variation. This difference was explained, in a measure, by the fact that some operators charge off big items such as stripping, major repairs, and so forth, to the seasons' operating costs, while others distribute these expenses over a period of years.

It was quite evident, however, that many operators do not know their actual producing costs, and it was strongly urged that every operator keep most accurate records and submit them to the head office, confidentially, for compilation. This would be most valuable data for operators.

It was suggested that Mr. Rice's report be printed and distributed to all members of the association, but this was defeated, owing to the fact that those operators who refused or neglected to report, would have an unfair advantage over those who did. However, the report will be printed and distributed to those members who sent in a report.

Following is a table illustrating the wide difference in production costs:

The maximum cost of fuel per ton on limestone was 14c.	
The minimum cost of fuel per ton on limestone was 4c.	
Trap Rock, Maximum	15 c
Trap Rock, Minimum	6 c
Labor cost per ton:	
Limestone, Maximum	98 c
Limestone, Minimum	13 c
Trap Rock, Maximum	73 c
Trap Rock, Minimum	23 c
Material cost per ton:	
Limestone, Maximum	53 c
Limestone, Minimum	04 c
Trap Rock, Maximum	44 c
Trap Rock, Minimum	03 c
Explosives cost per ton:	
Limestone, Maximum	16 c
Limestone, Minimum	04 c
Trap Rock, Maximum	14 c
Trap Rock, Minimum	05 c
Depreciation cost per ton:	
Limestone, Maximum	21 c
Limestone, Minimum	.005c
Trap Rock, Maximum	20 c
Trap Rock, Minimum	10 c
General Expense cost per ton:	
Limestone, Maximum	37 c
Limestone, Minimum	04 c
Trap Rock, Maximum	32 c
Trap Rock, Minimum	08 c

These figures and the wide difference between the maximum and the minimum cost are startling, and indicate that quarrymen should make a deeper study of cost production, and consult a competent cost accounting bureau.

Against Joining Sand and Gravel Association

While there were some who favored co-operating with the sand and gravel

men on matters of mutual interest, the general sentiment was overwhelmingly in favor of preserving the identity of the Stone Association. There was a great deal of discussion on this matter, and some of the members seemed to feel very strongly about it.

Ballast Group Report

The discussions of the ballast group were very interesting, and resulted in some rather heated discussion concerning the prices railroads should pay for ballast. Many producers are selling ballast to railroads at cost and below, while some are making a profit on it. The price obtained for ballast ranged from $1.10 a yard, to $1.65.

Mr. Rice said he was selling below cost, and believed it was impossible to get more, while another producer stated that he had never sold a ton without a profit, and should he ever be forced to do so, he would go back to farming. Mr. W. H. Hoagland, of the Marble Cliff Quarries, Columbus, O., said he believed that if the producers would show their customers actual figures on production, they would be more willing to pay a fair price. He said, "Most of our customers think that in view of the general downward trend of prices, stone should follow along. But they should be shown that while most industries profited enormously during the war, stone producers made practically nothing; that the price of stone was never raised in proportion to other commodities, and cannot now be lowered."

The Labor Situation

The labor situation was thoroughly discussed, and some of the talks on the relation of employers to employees were very interesting. The majority of quarry operators have reduced wages on common labor an average of 20 per cent, and not one has had any serious trouble.

Mr. Otho M. Graves told of the profit sharing plan of the General Crushed Stone Co. It is a most comprehensive plan, and has worked out to a degree unhoped for by the company. In sharing profits with the men, they were made to realize that they had a responsibility toward the company, and a voice in the management. Wage reductions of around 15 per cent were recently accepted by the employees without a complaint.

Mr. J. J. Urschel, of the Woodville Lime Products Co., stated that his company had tried profit sharing and bonus systems without success, but realizing a responsibility toward their employees, the company then built attractive homes for them, which were rented to them at cost which in no case was more than eight dollars a month, and he statcd that the morale of the organization was greatly improved by the success of this plan.

Officers Elected

The resolutions committee reported a vote of thanks to Canada, to the city of Toronto, and to the Provencial Stone and Supply Company, who were the official hosts of the convention.

They also proposed that the association secure the services of a man to act as assistant secretary and organizer, for the purpose of organizing the stone producers of the country into a closer unit, and induce those producers who are not already members of the association to join. It is be-

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ON THE SIDE

Mayor Church told the boys that Toronto was not a dry town—and while no one doubted his word, most of us were from Missouri.

Wm. Brittnell made everyone feel at home, and contributed largely to our entertainment.

Remember the applause when Mr. Stewart advised us to live under a monarchy, if we wanted real freedom? What was YOUR sensation when you saw the Union Jack waving over the city hall?

Wonder if Sandles ever wore a pink ribbon in his pajamas?

We'll wager Mrs. Stewart had a lot of coffee left, after our visit.

lieved that he will pay his own expenses by increasing the revenue of the association with new members, and the proposition was adopted witb great enthusiasm.

The maximum assessment was raised from ten cents per hundred tons to fifteen cents, in order to give the organization a larger working capital, and a minimum assessment of $25.00 was established.

The board of directors will meet two months prior to the next convention, and will arrange a definite program for it.

Mr. E. J. Krause, of the Columbia Quarry Company, St. Louis, Mo., was elected president to succeed Mr. Rice. Mr. Krause is prominent in the business circles of St. Louis. First vice-president, Mr. W. Scott Eames, New Haven Trap Rock Co., New Haven, Conn., second vice-president, R. Brink Tyler, R. B. Tyler Stone Co., Louisville, Ky.

The newly elected president, Mr. E. J. Krause, is a man who is keenly and actively interested in many commercial enterprises in St. Louis, Mo., ranging from mining to banking. He is president of the Willis Coal Mining Co., and vice-president of the Columbia Quarry Co. In addition to this, and being vice-president and director of a couple of St. Louis banks, an investment company, a realty company, orange and pecan groves in the South, Mr. Krause is president of the Wilco Farms Dairy, said to be one of the most extensive dairy farms in the country. Outside of these activities, Mr. Krause has nothing to do but look after the National Crushed Stone Association.

The following were elected to the Board of Directors for the ensuing year: John Rice, General Crushed Stone Co., Easton, Pa.; Dwight E. Woodbrige, Messaba Iron Co., Duluth, Minn.; W. W. Boxley, of W. W. Boxley and Company, Roanoke, Va.; A. J. Blair, Lake Shore Stone Co., Milwaukee, Wis.; C. M. Doolittle, Canada Crushed Stone, Ltd., Dundas, Ontario, Can.; Thomas McCroskey, American Limestone Co., Knoxville, Tenn., and A. Acton Hall, Ohio Marble Co., Piqua, Ohio.

The Social Side of the Convention

It was the sentiment of the convention that the Canadians were royal hosts, and they richly deserve the title. They opened the doors of their city, their homes, and their cellars to us, and—"that's all there is, there isn't any more."

The tour of the city was mighty interesting, and it made plain the wisdom of holding a stone convention in Toronto because it is a City of Stone. One would have to look long in Toronto, to find a frame dwelling—they are almost without exception built of stone or brick, and give to the city a wonderfully permanent and substantial appearance.

Some of the most prominent men in Canada were at the banquet Tuesday night, and it was a real privilege to hear their addresses. There was very little "shop talk" at the banquet, most of the talks being on subjects of general interest. Mr. J. F. M. Stewart acted as toastmaster, and after proposing a toast to his Majesty, the King of England, which was heartily responded to, he introduced Mr. J. S. McKin-

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Did you notice that the chambermaids held their convention just outside your door, at the King Edward?

They started work about four A. M. on that addition to the King Edward—at least they did the morning after the smoker.

Mr. Hoagland said, "Either I'm a d—fool, or everyone else is all wrong." How was that settled, anyway?

Mr. Urschel and Mr. Hoagland did their best to make the fellows talk business—but Toronto hospitality was an awful handicap.

That Burmuda proposition sounded mighty good to us—how about you?

All in favor of making Kelly court jester, say aye!

non, President of the Canadian Manufacturers' Association. Mr. McKinnon delivered a short, snappy talk in which he said that the chief object of a convention was to decide what is to be done, who is to be done, and how it is to be done.

Mr. Stewart was forced to leave early, and his place was taken by Mr. Sandles, who proposed a rather tardy toast to his Excellency, the President of the United States. There were several more short talks, and Mr. Sandles pertinent observations concerning each man he called upon kept the crowd in a laughing and congenial mood until it adjourned.

Mr. Sandles proposed that the name of the organization be changed from the National, to the International Crushed Stone Association, and while his proposal was greeted with loud applause, we are wondering what the official name of the association is.

However, the convention was a huge success socially, and our Canadian brothers and their wives deserve our warmest thanks and appreciation.

DELEGATES REGISTERED AT NATIONAL CRUSHED STONE CONVENTION

J. J. Sullivan, Dolese & Shepard, 108 S. LaSalle St., Chicago, Ill.
J. M. Porter, General Crushed Stone Co., Drake Bldg., Easton, Pa.
Daniel Foley, Federal Stone Co., Chamber of Commerce Bldg., Chicago, Ill.
B. T. Van Camp, Van Camp Stone Co., Palace Theatre Bldg., Cincinnati, O.
F. C. Cunning, Van Camp Stone Co., Palace Theatre Bldg., Cincinnati, O.
F. W. Schoendman, Wentworth Quarry Co., Vinemont, Hamilton, Ont., Can.
Robt. D. Gordon, Crushed Stone, Ltd., 47 Yonge St., Arcade, Toronto.
Fred W. Thompson, Point Anne Quarries, Ltd., Ft. Jarvis St., Toronto.
George H. Balfe, Monon Crushed Stone Co., Monon, Ind.
Otho M. Graves, General Crushed Stone Co., Easton, Pa.
E. T. Paul, Bluffton-Lewisburg Stone Co., Lewisburg, Ohio.
Chas. Stafford, Toledo Stone & Glass Sand Co., Toledo, Ohio.
Leslie J. Bennett, Buffalo Cement Co., 110 Franklin St., Buffalo, N. Y.
Chas. A. Freiberg, Buffalo Cement Co., Ltd., 110 Franklin St., Buffalo, N. Y.
W. E. Foote, Wickwire-Spencer Steel Co., Gasport, N. Y.
B. R. Babcock, Callanan Road Improvement Co., P. O. Box 773, Albany, N. Y.
Mrs. Herman H. Evans, Monon Crushed Stone Co., LaFayette, Ind.
E. E. Mann, France Stone Co., 1800 2nd Nat'l Bank Bldg., Toledo, Ohio.
James Savage, Buffalo Crushed Stone Co., 1097 Ellicott Sq., Buffalo, N. Y.
W. J. Keever, Marble Cliff Quarries Co., 907 Hartman Bldg., Columbus, Ohio.
W. H. Hoagland, Marble Cliff Quarries Co., 907 Hartman Bldg., Columbus, O.
C. P. Rigges, Columbia Quarry Co., 710 Fullerton Bldg., St. Louis, Mo.
Donald Woodward, LeRoy Lime & Crushed Stone Co., LeRoy, N. Y.
A. L. Worthen, Connecticut Quarries Co., 152 Temple St., New Haven, Conn.
C. F. England, 546 Confederation Life Bldg., Toronto, Ont.
D. W. Yambert, France Stone Co., 1800 2nd Nat'l Bank Bldg., Toledo, Ohio.
Robin Boyle, Standard Crushed Stone Co., Niagara Falls, Ont.
Thornton Dixon, Monroe, Mich.
H. E. Bair, France Stone Co., 1800 2nd Nat'l Bank Bldg., Toledo, Ohio.
I. L. Stinebaugh, France Stone Co., 1800 2nd Nat'l Bank Bldg., Toledo, Ohio.
C. R. Wagner, Nat'l Agr. Limestone Ass'n, Columbus, Ohio.
F. W. Stolle, Casper-Stolle Quarry & Const. Co., 408 1st Nat'l Bank Bldg., East St. Louis, Ill.
Andrew L. Moscrip, France Stone Co., 1800 2nd Nat'l Bank Bldg., Toledo, O.
F. T. Gucker, John T. Dyer Quarry Co., Harrison Bldg., Philadelphia, Pa.
R. W. Johnson, Johnson, Van Wagner & Johnson, Tontogany, Ohio.
D. M. Gray, Louisville Cement Co., 315 Guthrie St., Louisville, Ky.
Ralph E. McLean, East St. Louis Stone Co., Arcade Bldg., East St. Louis, Ill.
Joe O. Lavenberg, France Stone Co., 1800 2nd Nat'l Bank Bldg., Toledo, O.
R. J. Lowrey, Queenston Quarry Co., St. Davids, Ont.
J. J. Harrigan, France Stone Co., 1800 2nd Nat'l Bank Bldg., Toledo, Ohio.
Frank Rogers, Jr., Oliver Rogers Stone Co., 1198 Queen St. West, Toronto.
W. D. Robison, Toledo Stone & Glass Sand Co., 320 Terminal Bldg., Toledo.
J. F. M. Stewart, Point Anne Quarries, Ltd., Toronto, Ont.
Frank Rogus, Oliver Rogus Stone Co., 1193 Queen St. West, Toronto.
J. B. Hart, Canada Crushed Stone Co., Ltd., Dundas, Ont.
G. W. Essery, Crushed Stone, Ltd., 47 Yonge St., Arcade, Toronto.
J. L. Helmlick, LeRoy Lime & Crushed Stone Co., LeRoy, N. Y.
R. B. Tyler, R. B. Tyler Stone Co., 114 Fourth St., Louisville, Ky.
A. J. Sullivan, Inland Crushed Stone Co., Room 1105, 139 N. Clark St., Chicago.
John Rice, General Crushed Stone Co., Easton, Pa.
L. H. Hawblitz, 1800 2nd Nat'l Bank Bldg., Toledo, O. (France Stone Co.)
E. J. Krause, Columbia Quarry Co., 710 Fullerton Bldg., St. Louis, Mo.
F. W. Schmidt, Jr., Morris County Crushed Stone Co., 17 South St., Morristown, N. J.
F. W. Schmidt, North Jersey Quarry Co., Morristown, N. J.
C. M. Doolittle, Canada Crushed Stone, Dundas, Ont., Can.
W. R. Shaw, Provincial Stone & Supply Co., 200 McKinnon Bldg., Toronto.
W. L. Sporborg, Rock Cut Stone Co., 531 Union Bldg., Syracuse, N. Y.
A. G. Seitz, Rock Cut Stone Co., 531 Union Bldg., Syracuse, N. Y.

Chas. V. Higgins, Bound Brook Crushed Stone Co., Bound Brook, N. J.
L. C. Bonnell, Commonwealth Quarry Co., Summit, N. J.
A. P. Sandles, sec'y Nat'l Stone Assn., 405 Hartman Bldg., Columbus, Ohio.
Claude L. Clark, asst. sec'y Nat'l Stone Assn., 405 Hartman Bldg., Columbus, Ohio.
Jess Mossgrove, Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Geo. E. Schaefer, General Crushed Stone Co., Cutler Bldg., Rochester, N. Y.
Wm. Brittnell, Brittnell & Co., North Toronto, Ont., Can.
J. J. Urschel, Woodville Lime Products Co., 622 Madison Ave., Toledo, Ohio.
I. G. Owens, Water Street Trap Rock Co., Water Street, Pa.
H. B. Allen, General Crushed Stone, 1019 No. American Bldg., Philadelphia, Pa.
S. L. Squire, Canadian Good Roads Ass'n., Toronto, Ont.
Geo. P. Longwell, United States Crushed Stone Co., 111 Washington St., Chicago, Ill.
A. A. Bowman, (Canadian Ingersoll-Rand Co.) 27 Wellington St., East Toronto, Ont.
W. W. Phillips, Aetna Explosives Co., Toledo, Ohio, (2nd Nat'l Bank Bldg).
H. A. Everlein, 158 W. Lake St., (U. S. Rubber Co.), Chicago, Ill.
J. E. Klein, Stimpson Eqpt. Co., Grand Cent. Palace, New York City, N. Y.
C. N. Shaffner, Taylor-Wharton Iron & Steel Co., New York City N. Y.
Ray L. Williams, Marion Steam Shovel Co., Marion, Ohio.
R. N. Scriveners, Alfred Collyer & Co., 183 George St., Toronto, Ont.
C. A. Spensley, DuPont Powder, 1807 McVormick Bldg., Chicago, Ill.
W. J. Austin, Aetna Explosives Co., 1726 Tribune Bldg., Chicago, Ill.
Bradley S. Carr, American Manganese Steel Co., McCormick Bldg., Chicago.
L. W. Van Buskirk, Taylor Wharton Iron & Steel Co., High Bridge, N. J.
Sheldon Stearns, Worthington Pump & Mach. Corp., 115 Broadway, New York.
J. S. Bond, Worthington Pump & Mach. Corp., Cudahy, Wis.
J. G. McCarty, Metal & Thermit Corp., 15 Emily St., Toronto, Ont.
H. R. Hulbert, Metal & Thermit Corp., 120 Broadway, New York City.
H. J. Woodmansee, Wickwire Spencer Steel Corp., Buffalo, N. Y. (stone).
Wm. Jennings, Kennedy Van Saun Mfg. Corp., 120 Broadway, New York City.
J. L. Wilson, Manhattan Rubber Mfg. Co., Altamont Bldg., Cleveland, Ohio.
Capt. Lucius E. Allen, Pres. Ontario Good Roads Ass'n., Belleville Ont.
L. V. Lundquist, Stephens-Adamson Mfg. Co., 1st Nat'l Bk. Bldg., Chicago.
R. G. Miller, Jr., c/o Browning Co., 16226 Waterloo Rd., Cleveland, Ohio.
M. W. Allen, Browning Co., 16226 Waterloo Rd., Cleveland, Ohio.
Walter B. Carnes, Lima Locomotive Works, 30 Church St., New York City.
M. S. Kincaid, Grasselli Powder Co., 1617 Fisher Bldg., Chicago, Ill.
J. M. Johnson, Allis-Chalmers Mfg. Co., Milwaukee, Wis. (2029 Peoples Gas Bldg., Chicago, Ill.)
Wm. A. Anderson, Aetna Explosives Co., Inc., 808 Iroquis Bldg., Buffalo, N. Y.
Robt. Hambleton, Hagersville Crushed Stone Co., Hagersville, Ont, Canada.
James G. Parmalee, Ruggles-Coles Engr. Co., 120 Broadway, New York City.
F. W. Joswig, United Lead Co., 111 Broadway, New York City, N. Y.
James Laurin, Montreal Crushed Stone Co., Ltd., 590 Union Ave., Montreal.
G. V. Wood, Taylor-Wharton Iron & Steel Co., 30 Church St., New York.
A. G. Bennett, Laurin & Leitsch, 590 Union Ave., Montreal.
Thos. Fleming, Federal Stone & Supply Co., Ottawa, Ont.
J. Frank Corry, A. R. Williams Mach. Co., 64 Front St., Toronto, Ont.
J. W. Graham, Thomas Quarry Co., St. Marys, Ont., Can.
Daniel Barns, Thomas Quarry Co., St. Marys, Ont. Can.
James E. Moul, Gifford-Wood Co., 604 Electric Bldg., Buffalo, N. Y.

Builders Supply Dealers Meet

The National Builders Supply Association held its 22nd annual convention at the Hotel Sherman, Chicago, on February 21, and 22. The meetings were exceptionally well attended and the talks were listened to with a great deal of interest.

Monday's sessions were devoted to the business of hearing reports and appointing committees, and Monday evening a stag entertainment and luncheon was given for the visiting delegates.

The meetings Tuesday were taken up with addresses by men prominent in the business, some of the noteworthy ones being: "Housing Conditions in America," by Wharton Clay, commissioner, Associated Metal Lath Manufacturers," "Recent Developments in Concrete," by Lt.-Col. H. C. Boyden, Portland Cement Association; and "What is the Matter With the Construction Industry?" by E. K. Cormack, president Consolidated Company, Chicago.

After these, the different committees reported, officers were elected, and the convention adjourned.

The Centre Electric Company, Howard, Pa., is developing a silica stone deposit.

Frederick W. Kelly, president of the Helderberg Cement Company, is now president of the Chamber of Commerce at Albany, N. Y.

Newport Sand & Gravel Corp., has been organized at Rochester, N. Y., with a capital of $20,000 by H. Barnard, A. W. Magrander, P. J. Emmell, Rochester.

Belt Conveyors for Storing Materials

By DANIEL J. HAUER

A READER presents to the editors of PIT AND QUARRY a proposition for arranging a storage system for sand and gravel, which is also practical for crushed stone. The idea, being for a large storage system, is of interest, for it will be shown how this system of storage can be devised for a limited amount, and also one to take care of several hundred cars of material. It is of interest on account of being easily increased in size if there is available ground, and likewise its adaptability to varying conditions. The idea is to use belt conveyors in storing the materials, and also for rehandling them to the cars.

With the unusual shortage of cars that pitmen and quarrymen have had to contend with for several years and which is likely to continue for a few years, the economic storage and rehandling of such products mean much to those interested.

The reader sets forth his idea as follows:

"Instead of using bins for storage, use piles, and two belt conveyors running in concrete tunnels, and then up an incline discharging into cars. There are to be two concrete tunnels with openings 6x6 feet at right angles to the loading track, as shown in Fig. 1, each tunnel to be 500 feet long. The tunnels are planned for building on top of the ground, as shown by a cross section view of one in Fig. 2."

The general idea for storage is excellent, but it is far from complete. It would also be very expensive to place the tunnel on top of the ground. This is evidenced by an examination of Fig. 2. Here more than half of the material stored could not be handled by the conveyor unless picked up by hand and loaded upon it. This would be too expensive. Thus it would be necessary to have some mechanical means of handling this dead storage, dead as far as the belt conveyors are concerned. A locomotive crane with a grab bucket could do this, but if a crane is necessary, a different layout could be devised so that the crane could do all the rehandling without installing such an extensive system of belt conveyors. Thus if conveyor tunnels are to be used, why not arrange them so as to handle all the material?

It would also be too expensive to allow this dead storage to be unused for any length of time. The storage yard as outlined would hold more than 300 cars of materials so that in the dead storage there would be more than 150 cars of stored materials, easily having a value of more than $7,000, so that it would be wise to so devise the rehandling machinery as to have

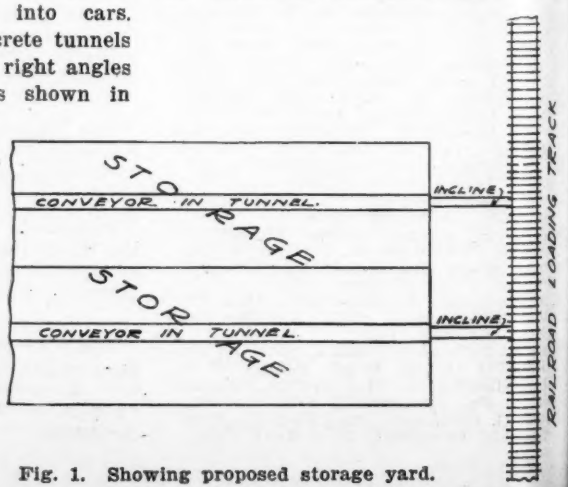


Fig. 1. Showing proposed storage yard.

available the entire storage for shipment when desired.

Most of the details have been left out of the proposed plan, so instead of criticising, it will be advisable to

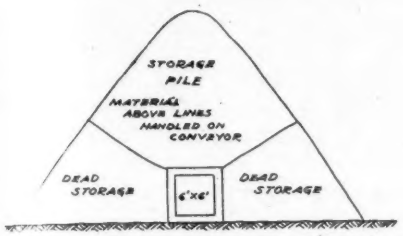


Fig. 2. Cross section of proposed storage.

discuss this method of storage and give sketches to show how such a system can be planned.

First of all, there must be some method of storing the material in the pile. One of the cheapest methods will be by an overhead belt conveyor, especially if the pile is to be made long, as shown in Fig. 1. Hauling by teams or trucks and going on top of the pile to dump will be quite expensive, and the plant would be held up at times waiting on vehicles, unless there was ample bin storage at the plant. For cars the same would be true, and in addition there would have to be an elevated trestle to run the cars upon and dump on the pile. These methods would mean a large number of men employed beside a large capital invested in the plant. The conveyors would do away with the daily payroll, except one or two men, and the investment would be little if any larger.

In order to have the conveyor in the tunnel to pick up all the stored materials, the tunnel should be underground. It is not necessary to have a tunnel with inside dimensions of 6x6 feet, for with a 24-inch belt conveyor the depth of the conveyor would be about 36 inches, while its overall width would be about 42 inches. A 24-inch belt conveyor run at a speed of 100 feet per minute would load an ordinary car in an hour, or ten cars in a 10-hour day. However, belt conveyors handling such materials and of this size are generally run at a speed of from 300 to 350 feet per minute, so it would be possible to load three cars per hour or 30 cars per day.

The overhead belt conveyor running at the same speed would handle the same amount of material. To load this overhead conveyor, large bins at the plant would not be necessary, but either some large loading hoppers or small bins would be needed. These could be built to hold 5 or 10 tons or more. In addition to loading this belt they are essential to grade the materials and allow the belt to handle first one grade of material and then another into the different divisions of the storage piles.

In constructing the tunnel for the underground conveyor, the plan and dimensions shown in Fig. 3 can be followed. Such a tunnel would have 15.25 cubic feet of concrete to the lineal foot, or about 56.5 cubic yards to the hundred feet. The belt con-

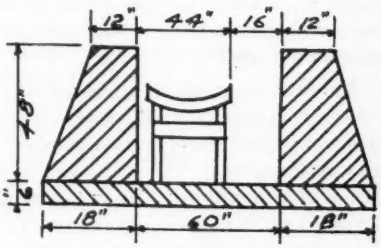


Fig. 3. Showing cross section of concrete tunnel.

veyor could be set at one side of the 4x5-foot tunnel, so that men could walk through it, and two or three men could work together to make repairs. Electric lights could be run on the left hand side above the conveyor so as to furnish lights when needed. The top

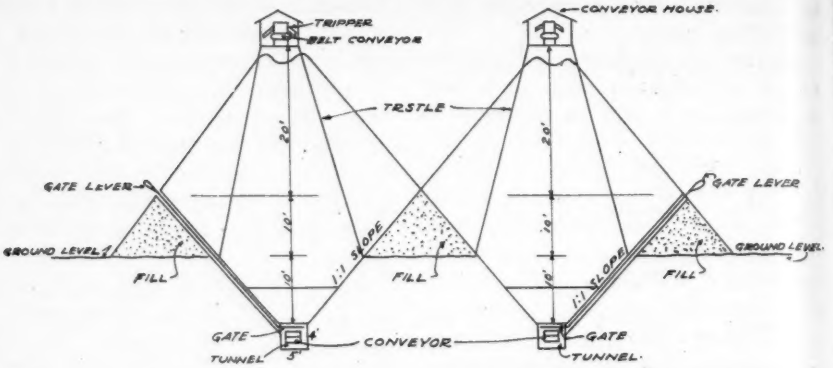


Fig. 4. Cross section conveyor belt system and storage piles.

to the tunnel will be explained later. A slight grade should be given to the tunnel so that rain water would run off to a dump or drain.

This tunnel should be located in the ground, as shown in Fig. 4. The top is located 10 feet below the ground surface. The excavation for the tunnel and the triangle (inverted), 20x10 excavated, will make the fills indicated on the plan. Thus either an earthen or concrete floor with a 1 to 1 slope, ideal for gravel, can be built that would carry all the materials to the conveyors, so that not a ton of it need have a man to handle it. Bents are built as shown, on the solid ground, to carry the overhead conveyor, which has a roof over it.

The entire method of handling the product is shown in the two sketches. The materials come from the plant on the overhead conveyor and are dumped wherever desired by the tripper. Gates are shown in the top of the tunnel to allow the material to flow through onto the belt. Long levers are attached to these gates so as to shake them and cut off the flow when the materials have a tendency to choke the belts or cause the materials to run off the belt. These levers operate through troughs or ducts, so that the operator can watch the material and the belt.

In Fig. 5 are shown false bottoms placed so that all the material longitudinally will flow to the gates. Thus by means of these false bottoms, either made of timber or concrete, and the traps in which the gates operate, the roof of the tunnel is provided for; and if these false bottoms are made of lumber, it is easy to change the entire arrangement to meet any conditions. In Fig. 5 is shown a wall built on one side of the bents to hold the end of the storage pile. Beyond it, in the tunnel, is the take up on the conveyor. This take up should be at least one foot for every hundred feet on the conveyor. By means of timber partitions built wherever desired on the bents, the storage can be divided into compartments to store various sizes and kinds of materials. Thus a number of different kinds of materials can be stored over the same belt, and cars loaded from any compartment.

Each lineal foot of such a pile has a storage capacity of 30 cubic yards, so that one pile as shown with end walls 500 feet long would store about 230 cars of pit or quarry products. Thus two piles, as shown in the sketch in Fig. 4, would store about 460 cars, much more than any operator would care to store.

A storage pile 100 feet long can be divided into four or more compart-

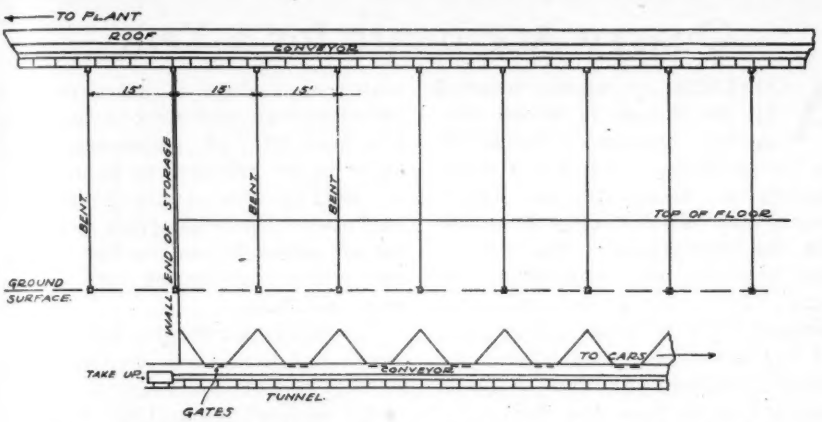


Fig. 5. Longitudinal section of conveyor belt system and storage piles.

ments and would store about 45 carloads. Thus it can be seen that a fair storage system can be started by building 100 feet only, and if the business demands it, additional compartments can be added, and if space permits, the storage system can be made 500 or more feet in length.

It is much cheaper to make the system with a single set of conveyors than to have two sets, as shown in Figs. 4 and 5, as the capital expenditure is reduced and extra conveyors will not be needed to carry the material from the plant to the stocking conveyor, which is a considerable item. Belt conveyors, to be run economically, should be straight and on slight grades. Steep inclines can be used, but it costs more in power operation. Although this method of transportation and rehandling has its limitations, yet it is entirely practical for the work suggested by our reader, but the many details to make it economical and successful must be worked out with the greatest care.

Morton R. Grinnell, limestone producer, Yellow Springs, Ohio, reports finding two human skulls and other bones embedded in rock and which were exposed by blasting. The lime had preserved them perfectly.

Stone and Lime Handling Machinery

It will be of particular interest to readers of PIT AND QUARRY to know that there has just been published by the Link-Belt Company, of Chicago, a new book called "Link-Belt Stone and Lime Handling Machinery." The book is divided into two sections, the first section devoted to Stone Handling and the second to Lime Handling.

Illustrated and briefly described in this book are typical installations of elevating and conveying machinery for the handling of stone and lime, as well as some of the elements used in their construction.

Anyone interested in this subject can obtain a copy of this book by addressing the Link-Belt Company, Chicago.

In an equity proceeding in the United States District Court at New York, Judge A. N. Hand appointed Edward H. Childs receiver for the Alsen Cement Co. of America, who have offices at 110 West Forty-second Street, New York City, and works at Alsen, N. Y. The company's gross liabilities were placed at $600,000, and assets are stated to amount to $2,225,000. The complainant in the case, Julius de Vries of New Jersey, who has claims aggregating $4,200, asserted in his complaint that the protection of the court was necessary in order to conserve the assets for the benefit of creditors, and to keep the company running and a going concern.

Quarry Accidents for a Year

ACCORDING to reports received by the Bureau of Mines from quarry operators throughout the United States, there was a slight decrease in the fatality and injury rates at quarries in 1919 as compared with the year before. The records show that 1.93 men were killed and 144.20 were injured out of every thousand workers employed in 1919, and 2.11 killed and 147.07 injured per thousand employed in 1918. These rates are based upon the number of men reported employed, and are converted to the equivalent number of

The tables presented in this report for 1919 are based on returns from 1,724 operators who actually worked their quarries during the year. The number of employees reported was 75,505, of whom 123 were killed and 9,199 injured. The quarries were operated an average of 253 days or a period of time equivalent to 19,138,308 man-days for all employees. The latter figure indicates an increase in the working time of more than 7 per cent over the previous year, thus making the slight decrease in the fatality and injury rates during 1919 all the more gratifying.

The figures for granite quarries, by causes and States are compiled from reports of 301 operators, employing 10,466 men, of whom 7,830 were employed in and about the quarries and 3,086 at outside works. When reduced to a 300-day basis the total number of full-time workers becomes 8,829, and the accident rates are based on this figure. The average number of days the quarries were in operation during the year was 253. The total reported deaths and injuries due to

MEN EMPLOYED AND NUMBER KILLED AND INJURED, BY KIND OF QUARRY, DURING THE YEARS ENDED DEC. 31, 1919, AND 1918

1919.

Kind of quarry.	Active operators.	Men employed.		Killed.		Injured.		Widows.	Orphans.
		Actual number.	Equivalent in 300-day workers (calculated).	Number.	Per 1,000 300-day workers.	Number.	Per 1,000 300-day workers.		
Cement rock	76	9,446	9,038	24	2.66	2,093	231.58	12	29
Granite	301	10,466	8,829	16	1.81	1,101	124.70	8	14
Limestone	952	39,854	33,055	65	1.97	4,431	134.05	36	79
Marble	37	4,006	3,920	2	.51	295	75.26	.....	.....
Sandstone and bluestone	183	3,630	2,622	2	.76	346	131.96	2	4
Slate	78	3,373	2,812	5	1.78	277	98.51	4	7
Trap rock	97	4,730	3,518	9	2.56	656	186.47	3	1
Total, 1919	1,724	75,505	63,794	123	1.93	9,199	144.20	65	134

1918.

Cement rock	64	7,904	7,467	16	2.14	1,782	238.65	14	34
Granite	248	7,909	6,200	13	2.10	680	109.68	10	22
Limestone	832	34,873	30,127	54	1.79	4,258	141.34	33	70
Marble	42	3,414	3,275	7	2.14	190	58.02	4	5
Sandstone and bluestone	255	8,536	7,991	19	2.38	1,183	148.04	2	.....
Slate	76	2,690	2,212	7	3.16	213	96.29	1	.....
Trap rock	103	3,006	2,013	9	4.47	413	205.17	4	11
Total, 1918	1,620	68,332	59,285	125	2.11	8,719	147.07	68	142

FATALITIES AND INJURIES, BY CAUSES AND KINDS OF QUARRY, DURING THE YEAR ENDED DEC. 31, 1919

Kind of quarry.	In and about quarry.															In outside works.											Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machine or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Killed:																													
Cement rock	2	.....	.....	2	4	.....	.....	.....	.....	.....	4	.....	.....	.....	2	14	3	.....	.....	.....	2	3	.....	.....	1	.....	1	10	24
Granite	2	.....	.....	5	1	1	1	.....	.....	.....	1	.....	.....	.....	1	12	2	.....	.....	.....	.....	.....	1	1	.....	.....	.....	4	16
Limestone	9	2	.....	16	11	2	.....	3	2	1	4	.....	.....	.....	.....	50	4	5	.....	.....	1	1	.....	.....	.....	.....	4	15	65
Marble	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Sandstone and bluestone	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Slate	1	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	2	5
Trap rock	1	.....	.....	.....	3	.....	1	.....	.....	.....	2	.....	.....	.....	.....	7	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	2	9
Total	**15**	**2**	**....**	**24**	**19**	**3**	**6**	**3**	**2**	**1**	**12**	**....**	**....**	**....**	**3**	**90**	**9**	**7**	**....**	**....**	**3**	**5**	**2**	**1**	**1**	**....**	**5**	**33**	**123**
Injured:																													
Cement rock	121	64	49	14	89	33	49	83	16	31	73	13	1	29	216	881	79	143	127	52	22	110	125	116	7	108	323	1,212	2,093
Granite	63	129	25	36	43	43	36	186	2	41	71	9	....	10	99	793	19	43	27	3	2	11	24	100	48	....	31	308	1,101
Limestone	349	574	98	89	438	120	189	402	20	106	271	40	....	70	284	3,052	147	256	112	53	26	122	162	167	83	63	188	1,379	4,431
Marble	3	26	5	....	3	13	3	5	2	9	7	1	....	....	1	78	12	23	7	7	2	13	21	10	120	....	2	217	295
Sandstone and bluestone	32	73	16	16	24	11	9	22	3	10	14	3	....	2	9	244	10	17	8	4	3	7	14	17	7	....	15	102	346
Slate	12	68	3	2	5	12	24	11	....	8	31	4	....	2	32	214	.....	7	1	2	1	3	2	2	32	....	13	63	277
Trap rock	61	90	9	10	61	19	21	113	....	16	34	10	....	8	46	498	26	34	7	7	1	15	21	21	5	9	12	158	656
Total	**641**	**1,024**	**205**	**167**	**663**	**251**	**331**	**822**	**43**	**221**	**501**	**80**	**3**	**121**	**687**	**5,760**	**293**	**523**	**289**	**128**	**57**	**281**	**369**	**433**	**302**	**180**	**584**	**3,439**	**9,199**

NUMBER OF MEN EMPLOYED, DAYS' WORK PERFORMED, AND NUMBER OF MEN KILLED AND INJURED AT ALL QUARRIES IN THE UNITED STATES, 1913 TO 1919

Year.	Average days active.	Men employed.		Total shifts.	Number killed.		Number injured.	
		Actual number.	Equivalent in 300-day workers (calculated).		Total.	Per 1,000 300-day workers (calculated).	Total.	Per 1,000 300-day workers (calculated).
1913	246	106,278	87,141	26,142,237	183	2.10	7,739	88.81
1914	233	87,936	68,187	20,456,157	180	2.64	7,836	114.92
1915	246	100,740	82,447	24,734,224	148	1.80	9,671	117.30
1916	253	90,797	76,457	22,937,178	173	2.26	13,427	175.62
1917	261	82,290	71,525	21,457,357	131	1.83	13,242	115.14
Average for five years.	247	93,608	77,151	23,145,431	163	2.11	10,383	134.58
1918	260	68,332	59,285	17,785,504	125	2.11	8,719	147.07
1919	253	75,505	63,794	19,138,308	123	1.93	9,199	144.20

accidents are as follows: Number of deaths, 16, or 1.81 per 1,000 (300-day workers); number of injuries, 1,101, or 124.70 per 1,000 (300-day workers). The fatality rate shows a decrease from the preceding year, but the nonfatal injuries are slightly higher.

The figures for limestone quarries, by causes and States, are compiled from the reports of 952 operators, employing 39,854 men (33,055 300-day workers), of whom 27,248 were employed in the quarries and 12,606 outside of the quarries. The average number of days worked was 249. The total reported deaths and injuries due to accidents are as follows: Number of deaths, 65 or 1.97 per 1,000 (300-day workers); number of injuries, 4,431, or 134.05 per 1,000 (300-day workers), showing an increase in the fatality rate and a decrease in the nonfatal injury rate as compared with 1918.

The figures for sandstone and bluestone quarries by States are compiled from reports of 183 operators, employing 3,630 men, of whom 2,667 were employed in the quarries and 963 outside of the quarries. The total number of employees reported, when reduced to its equivalent of 300-day workers, becomes 2,622, and the ratios are based on this figure. The quarries were in operation an average of 217 days during the year. The total reported deaths and injuries due to accidents are as follows: Number of deaths, 2, or 0.76 per 1,000; number of injuries, 346, or 131.96 per 1,000 (300-day workers).

The cement-rock quarries are represented by 76 operators, who employed 9,446 men, of whom 3,413 were employed in the quarries and 6,033 employed in mills and other outside works. The total number of employees, reduced to a 300-day basis, is equivalent to 9,038 full-time workers, and the accident ratios are based on this figure. The plants were active 287 days. The total reported deaths and injuries due to accidents are as follows: Deaths, 24, or 2.66 per 1,000; and injuries 2,093, or 231.58 per 1,000. The apparently higher ratio of injuries in the cement-rock quarries as compared with other quarries is probably a result of many cement quarries being worked by companies that keep better records and render more detailed reports. Many small quarry operators keep no record of injuries, hence the seemingly small

COMPARISON OF QUARRY ACCIDENTS, 1915 TO 1919

Injury.	1915	1916	1917	1918	1919
1. Fatal	148	173	131	125	123
2. Serious (time lost, more than 14 days):					
A. Permanent disability—					
Total [a]	16	26	10	7	23
Partial [b]	507	446	354	185	225
B. Others	1,365	2,194	2,266	1,466	1,612
3. Slight (time lost, 1 to 14 days, inclusive)	7,783	10,761	10,612	7,061	7,339
Total	9,819	13,600	13,373	8,844	9,322
Men employed	100,740	90,797	82,290	68,332	75,505

[a] *Permanent total disability.*—Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis, or other condition permanently incapacitating workman from doing any work of a gainful occupation.
[b] *Permanent partial disability.*—Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, any dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

number of nonfatal accidents in some of the other groups.

Falls or slides of rock or overburden have for several years been the most prolific source of fatal accidents at quarries, but in 1919 were responsible for 16.67 per cent of the fatalities, which is less than the number due either to haulage equipment or explosives. Nonfatal injuries caused by falls or slides of rock constituted 11.13 per cent of the total and were less numerous than those due to handling rock at the face, to haulage, or to flying objects.

The largest number of fatalities due to any one of the 15 causes enumerated was from explosives, which represents 26.67 per cent of the total. Of the total number of nonfatal injuries only 2.90 per cent was due to explosives.

Next to explosives, haulage accidents in and about quarries resulted in a larger number of deaths than due to any other cause, the number being 19, or 21.11 per cent of the total due to all causes. Only 11.51 per cent of the injuries were caused by haulage accidents the number being less than that due either to handling rock at the quarry face or to flying objects.

Of the total number of accidents at outside works, haulage was resonsible for 27.28 per cent of the fatalities and 8.52 per cent of the injuries.

Of the accidents in and about the quarries, 13.34 per cent of the fatalities and 8.70 per cent of the injuries were caused by machinery, whereas at outside works 21.21 per cent of the fatalities and 15.21 per cent of the injuries were due to the same cause.

After having granted to the Utah Sand & Gravel company of Salt Lake City, permission to blast at the company's gravel bed in North Salt Lake under certain restrictions, the city commission revoked the permit upon protestations of residents in that section. Several property owners through their attorney, declared that houses in the vicinity of the gravel beds were being damaged by the blasts and that the health of many people was being impaired by the noise. It was also set forth that the children attending school in that section were being prevented from properly pursuing their studies.

The Farmers Lime & Marl Company has been organized to develop a deposit of fresh water marl near Vesuvius, Rockbridge County, Virginia. This is said to be the largest deposit of marl with railroad facilities in that state. A grinding plant with capacity of 150 tons per hour will be erected. The company will produce fresh water marl for agricultural purposes, also crushed limestone for road building and general construction. Charles S. Schubert is president of the company, and E. A. Schubert is consulting engineer, with offices at Room 312, MacBain Bldg., Roanoke, Va.

Elaborate Conveyor Systems

Notable Plant at Knoxville

BY FRED L. CONNER
President Kinzel-Thompson Sand & Gravel Company, Knoxville, Tenn.

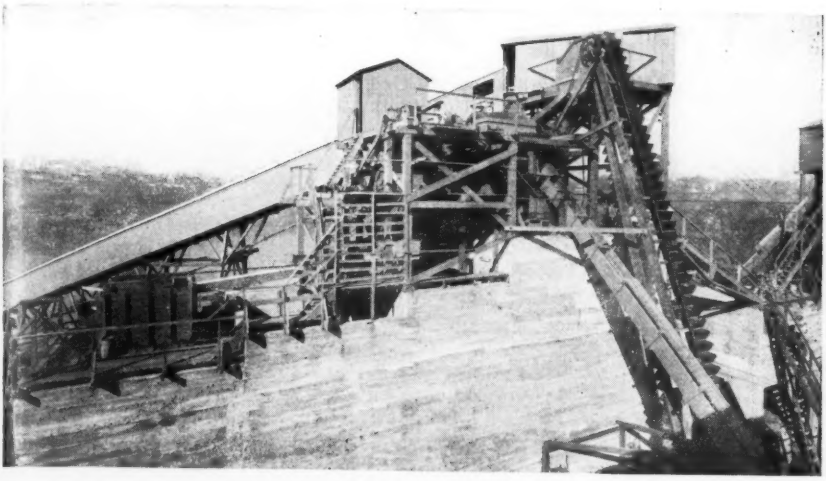
THE photographs shown herewith are perhaps almost sufficient in themselves to give one a good idea of the plant of the Kinzel-Thompson Sand & Gravel Company at Knoxville. However a few words regarding our processes and the sequence of operations may be desirable.

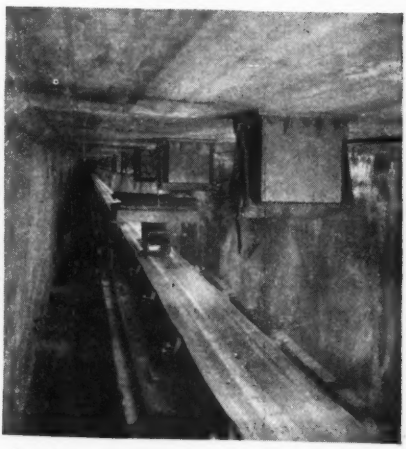
The material is dredged in the Tennessee River about 2,000 feet above our wharf and is dug by a derrick boat, loaded onto barges and transported to our unloading wharf. It is there picked off the barges by a stationary derrick and clam-shell bucket, dropped into a hopper and elevated to the top of the washing bin by belt conveyor.

From there it is forced by a stream of water down an incline into a 2-inch opening conical screen where all stone larger than 2 inches is rejected and goes to the crusher by direct chute. The crushed stone is then elevated back to the head of the screen and goes through the regular system of screening.

We make three sizes of stone: 2-inch down to 1½-inch; 1½-inch down to ⅞-inch, and ⅞-inch down to ¼-inch; and three grades of sand—a very coarse concrete sand, a brick sand, and a fine asphalt sand.

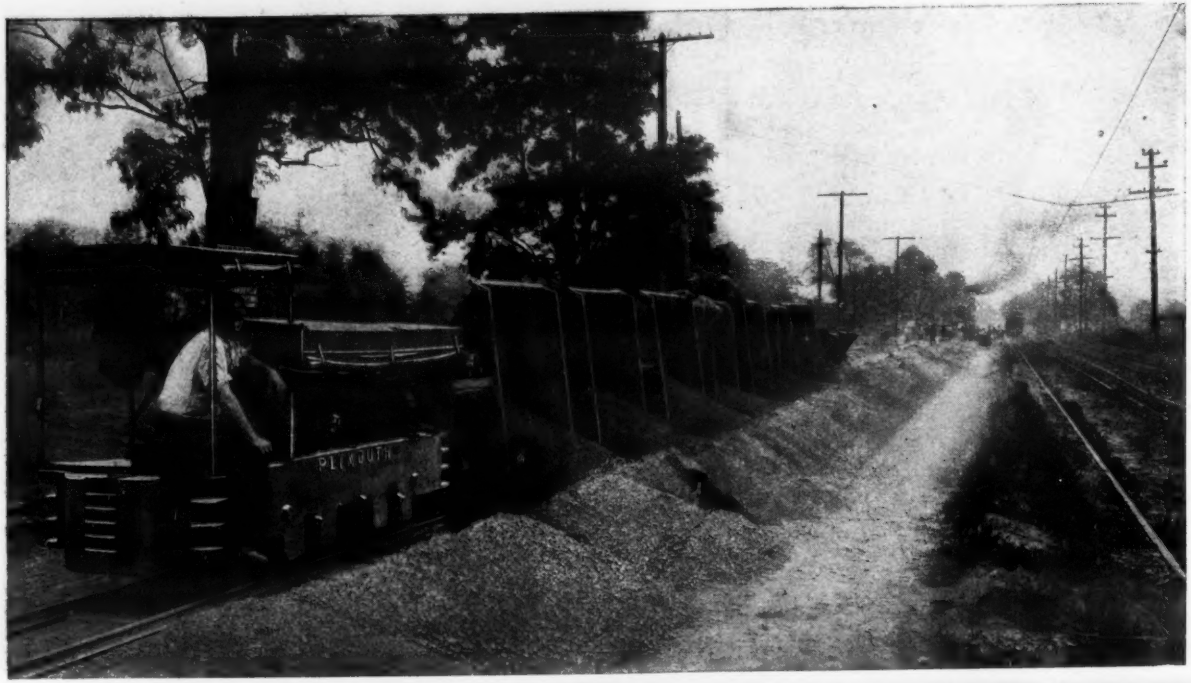
The coarse sand as it passes through the chute goes through the screen into an automatic tripper; the fine sand goes on to settling bins, which take out the medium sand. The overflow of this bin goes on to another settling bin of larger capacity where we save all the very fine sand and silt. The washing bins proper hold from 250 to 300 tons each and as we get a surplus of material in the washing bins this is drawn by belt conveyor to a storage pile having a capacity for storage of 52,000 cubic yards.





Several views of this notable plant

PLYMOUTH



Illustrating the Road Construction Equipment of the R. D. Baker Company, of Detroit

This company owns three 3-ton PLYMOUTHS. In a letter to our

be glad at any time to recommend your machine."

This company owns three 3-ton PLYMOUTHS. In a letter to our office from Mr. Baker, he uses a paragraph to say:

"We have three PLYMOUTH 3-ton Gasoline Locomotives, and they have given us excellent service. They are very economical, simple to operate, and so substantially constructed that repairs are a minor expense. We will be glad at any time to recommend your machine."

Users of the PLYMOUTH Locomotive have been so willing and exultant in expressing their appreciation of its utility that we are not only profoundly grateful, but it is an inspiration to keep the PLYMOUTH unmatched in power and performance.

Write for Special Road Bulletin.

The Fate-Root-Heath Company Plymouth, Ohio

PLYMOUTH

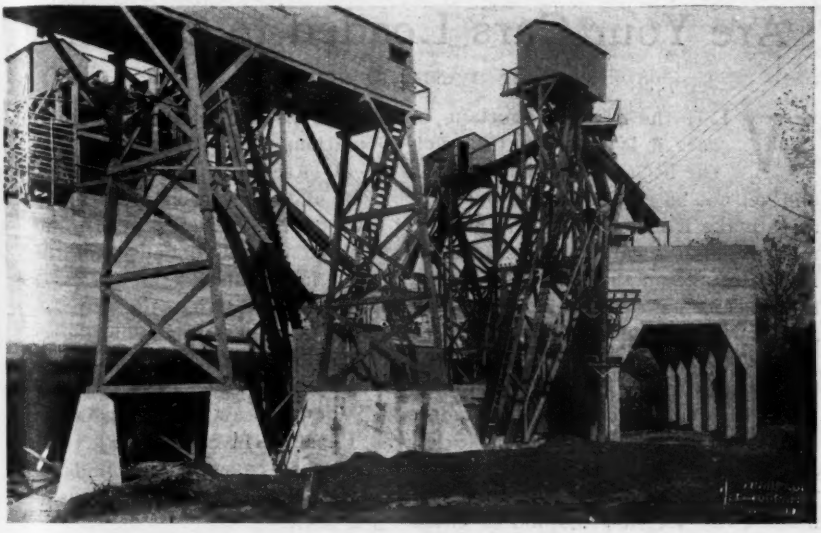
Gasoline Locomotives

Materials are proportioned right on the belt conveyor

Serviceable type of conveyor construction

Material kept from spilling off belt

FURTHER DETAILS OF THE KNOXVILLE PLANT



Much concrete is used in construction

Underneath the storage pile is a tunnel equipped with a belt conveyor with numerous openings on the top of the tunnel underneath the stored materials. The material is then reclaimed from the storage pile and conveyed to street car loading bins or to railroad car loading bins. Underneath and at the sides of the bins we have openings to load trucks, so there is never any congestion around the plant.

At the end of the street car bin and in line with the washing and car bins we have a 75-ton scale which enables us to weigh street cars as well as trucks.

The plant cost us about $150,000 to construct and has a rated capacity of 1,000 tons a day. This plant is located on the L. & N. Railroad at Knoxville.

The conveying equipment was installed by the Stephens-Adamson Mfg. Company of Aurora, Ill., the dredging and derrick machinery by the Clyde Iron Works, Duluth, Minn. The plant is electrically driven throughout with the exception of the derrick boat and stationary derrick, which are operated by steam. There are thirteen motors in the plant, as every unit is operated by a separate motor. We force our water to the elevation of 92 feet, using a Fairbanks centrifugal pump attached to a 50-horsepower motor.

The Port Huron Core and Sand company has been organized at Port Huron, Mich., for the purpose of excavating, shipping and marketing of sand for foundry use. The incorporators and stockholders in the new company who are Port Huron people, are William G. Jenks, G. F. Connors, Alice Tudhope and H. W. Sweeting. The company has been incorporated for $180,000, and already machinery to the value of $10,000 has been purchased and is on the ground. A large steam shovel will be used for the excavation of the sand.

Plans for the erection of the first $1,000,000 unit of a large cement plant at Magnolia, Ga., are being formulated by Richard K. Meade, of Baltimore, according to announcement at Atlanta by Callaway and Merry Development company, which is organizing the Cal-Mer Portland Cement company. The site of the proposed plant is on the Southern railway 31 miles southeast of Macon.

Are Your Cars Loaded to Capacity?

By DANIEL J. HAUER

WITH the present shortage of cars, it is important that each car be loaded to full capacity, and yet not be given such an overload as to make it necessary after the railroad weighs the cars to make arrangements to take off the overload, an item that means an expense and the possible wasting of tons of material.

With railroad scales directly under the bins there is little if any trouble in loading cars properly; but as few plants are provided with such scales, and must depend upon the railroad to weigh the cars, possibly some few miles away, an easy method of measuring the load in a car and obtaining its weight will be welcomed by many pitmen and quarrymen. At the same time the method must be so simple as to admit of its use by an uneducated laborer.

The following method is such a one, and is founded upon sound engineering principles and has been proved by some months of use as a practical and efficient means of loading cars to their rated capacity and such an overload as the railroad company will allow. The method and formula have been derived by Robert Lacy, C. E., president of the Neverson Granite Co., Inc., of Sims, N. C., and has been used by Mr. Lacy's company, as well as several other quarries in North Carolina that have been furnished by that gentleman with instructions as to the use of the method.

Mr. Lacy states that with this method you secure the maximum loading of cars, including the ordinary allowance of overload. For instance, in three months of use, the average maximum capacity of cars received for loading at his quarry was 50.6 tons, while the average loading by his method was 50.4 tons, less than one per cent variation.

The method and way of making calculations is as follows:

(1) Ascertain the weight per cubic foot of the material to be loaded. At the quarry in question the average weight was 90 pounds and this was used in calculating.

(2) Obtain from the car itself or from the Car Equipment Register the following information:

Length of car in feet, inside at top.
Width of car in feet, inside at top.
Capacity in cubic feet.
Marked capacity in pounds.
Excess loading allowed, usually 10 per cent.

A car equipment register can be obtained from the superintendent of transportation of your railroad. In it are listed all the freight cars in use in the states, car series numbers, and the information outlined in this paragraph. With this information obtained and the following calculations made, a blank book can be used to list the various cars and have available the desired information. Within a few months thousands of cars can thus be listed.

Take the following example:
Length, 30 feet.
Width, 9.46 feet.
Capacity, 1,731 cubic feet.
Marked Capacity, 110,000 pounds.
Excess Loading, 121,000 pounds.

(3) Make the following calculation:

30×9.46 ft. $= 283.8$ cu. ft. $\times$ 90 lbs. $=25{,}542$ lbs. $\div 2{,}000$ 12.77 tons for each foot tin depth of the car.

As the car has 1,731 cu. ft in it level

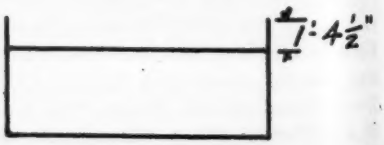


Fig. 1—Showing level load in car, 1 ft. 4½-inch from top

full and the material weighs 901 lbs. to the cu. ft., then 1,731 × 90 = 155,790 lbs. ÷ 2,000 = 77.89 tons if the car is level full. This would be nearly 50 per cent overload.

If the cars were given loads with a level top it would mean that the load

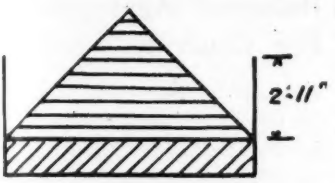


Fig. 2—Showing car as actually loaded with pyramid or triangular shape

would have to be within about 1 ft. 4½ inches from the top of the car, but to level it off as shown in Fig. 1 would be a useless expense.

The car as loaded from a bin will be as shown in Fig. 2. Divide the width by 6 for 1½ to 1, average slope of material, and the result will be the equivalent height for the full width of the car at the top.

Multiply the resultant figure by the weight if the material in a vertical foot of the car at the top, giving the tonnage in the triangle, thus:

9.46 ÷ 6 = 1.58 ×12.77 tons = 20.18 tons.

(4) Add the weight of this triangle to the weight of the loaded car level full and subtract the allowable load in tons, thus:

77.89 tons + 20.18 tons = 98.07 tons − 60.5 tons (allowable load) = 37.57 tons.

This figure covers the space that should be left in the car. Divide this remainder by the weight of a vertical foot of the car and the resultant quotient is the distance from the top at the sides of the car that the slope of the material must meet the side of the car. Thus:

37.57 tons ÷ 12.77 = 2.94 ft. reduced to feet and inches being 2 ft. 11 in.

This means that the loading must be stopped as soon as the slope of the material reaches a point 2 ft. 11 in. down from the top of the car. To know this quickly a stick is used as shown in Fig. 3. This measuring stick is made of 1x4, S4S lumber laid off with feet and inches from the bottom up. Holes a quarter inch in diameter are bored in the stick as shown. An iron pin of quarter inch iron 16 inches long, with four inches turned down, as shown is run through the rod at 2 ft. 11 inches from the bottom, and hung by means of the hook on the inside of the car. This tells where the slope of the material must come to on the car side.

The car should be loaded uniformly from end to end. This is done by pinching the car along about 4 ft. at

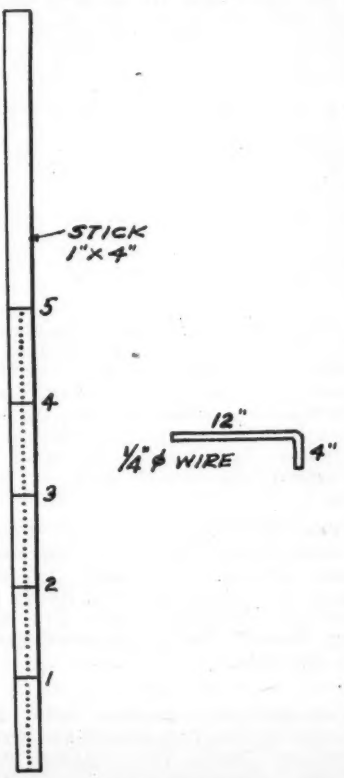


Fig. 3—Showing measuring rod

a time with a car mover, sliding the measuring rod along the side of the car as the latter is moved. The small valleys between the peaks reduce the weight somewhat below the 110 per cent allowed.

If the bin gates are not centered exactly over the car, a correction plus or minus should be applied, equal to half the difference of the sides.

A clerk or timekeeper, when he takes the number of the cars, makes the necessary calculations and marks the rod measurement on the side of the car with chalk, and the loading man sets his stick accordingly. One man attends to the bin gates and the measuring rod, and a second man moves the car at the direction of the man on the car.

Mr. Lacy says, "We have calculated in our spare time 248 series of cars on different railroads, including many duplicates, and are adding to our directory book every few days when new cars come in. The dimensions to be used on the rod is marked in white chalk on the side, and frequently the same cars come back. We will be glad to furnish any further information desired, and show anyone our directory for their own use."

Cement-making has been resumed by the Ash Grove Lime & Portland Cement Co. at Chanute, Kas., after its plant had been shut down since Christmas. During the time the kilns were idle the company furnished employment to its force by doing construction and repair work.

The Glen Falls Portland Cement company, Glen Falls, N. Y., has elected these officers: President, George S. Bayle, Jr.; vice-presidents, Byron Lapham and George F. Bayle, Jr.; secretary, John E. Parry; treasurer, Arthur W. Sherman.

Incorporation papers have been granted to the Texas Sand and Gravel Company, Waco, Tex.; capital stock, $75,000. Incorporators: L. D. Eastland, W. D. Eastland and T. J. Palm.

Balanced Aggregate

THIS is a page from the Builders' Blue Book, sent out by the Superior Sand and Gravel Company of Detroit.

Balanced Aggregate For Concrete Work

Many Architects, Contractors, and Owners of Buildings thoroughly appreciate the value to them of using our "Balanced Aggregate" for concreate work.

Clean material—properly mixed —right sized Crushed Stone, give no trouble in running concrete containing steel re-inforcment.

A big item—Balanced Aggregate saves Cement in doing the job.

Try it out.

"Balanced Aggregate is the thing"

It shows that this enterprising concern is trying to keep abreast of the times and get out its materials in line with the popular demands.

A merger of the Alpha Portland Cement Company, and the Cement Securities Company of Denver has been announced. The new company, to be known as the Alpha Cement Company will be a $30,000,000 concern, according to the announcement.

Griffith Sand and Gravel Company, Griffith, Ind., is a new company incorporated with a capital of $20,000, to operate sand and gravel pits; directors, W. E. Schrage, Carl Lundgren, J. J. Nejdl.

Announcement is made of the sale of one-half interest in the Reinert Gravel company at Algonquin, Ill., by John F. Reinert of South Elgin, to the American Sand and Gravel company. The consideration was named at $100,000.

Do You Know This Man?

IN Our Town is a sand and gravel producer who never appears to be so busy that he can not spare a few moments or hours and days if necessary toward helping out any public spirited movement. It seems that when anything for the public good really is to be done, the promoters pick this man with unfailing promptness for a leading role in the project. And they never have been disappointed. Once his interest is aroused and he feels that the movement really will benefit the public as a whole, he goes into the thing with a wholeheartedness that is irresistible and the thing is put over in record time.

During the past few years he has received more publicity of the favorable sort than any other single individual in our town. Regardless of the fact that he never appears to be a slave to his business, it has prospered nevertheless and has grown from small beginnings to one of the largest of its kind in the city. When he is at the office, he has time to see everybody from the most humble employe to a curious person, such as the writer, who desired to find out how it is possible.

Three attempts were necessary before this man could be caught in his office and subjected to a few questions. On the first visit it was found that he was out at the head of a team of willing workers trying to beat another team of equally willing workers in securing a larger number of members for the Chamber of Commerce. The second attempt discovered that he was out at the head of another team trying to raise more money than any other team for a Community Chest to take care of all the regularly organized charities for a year. Having profited by two ineffectual attempts a telephone appointment was made the third time and he finally was "bearded in his den".

This is being written in the first place for the benefit of those selfish individuals who believe the particular business in which they are engaged should be uppermost in mind night and day; for those persons, who when asked to join some organization ask right off the reel—quick—what they are going to get out of it; for those individuals who can not see ten feet ahead of a dollar and can not stand to see one depart from behind the loose brick in the mantle place unless five more will return of their own free will and accord the next day; those men in the trade who feel they have to be tied to their work from early morning until late at night and for this reason are not even well acquainted with their families.

Because of the intimate nature of the interview, the name of this man will not be given, nor will the city, for were the city named he would be recognized immediately. Suffice it to say that he is in business in one of the larger cities of the middle west and is a real live man—not a myth.

The conversation, stripped of the questions, which are of no moment, was about as follows:

"I came here about seven years ago. I was in business in another state and just about broke even. Before disposing of the business there I took an inventory of myself and discovered that I was immersed in business to such an extent that the perspective was all warped. I discovered that I was selfish and knew I had few personal friends. I knew if I ever was to change I should have to change cities also, so I sold out and moved.

"The first official act after getting the business started in the new location was to join the Chamber of Com-

merce, something I had not thought necessary before. Formerly I could not see what good I could get out of such an affiliation and hated to spend the money. I began taking lunch there regularly and got acquainted with other business men. I was taken as a guest by one of my new acquaintances one day to a luncheon of a business club, it might have been the Rotary Club, the Kiwanis Club, the Optimists' Club, the Exchange Club or what not—but in my case it was the Kiwanis Club. They had such a good time that I determined to join, if possible. I found my classification was open and shortly afterward was admitted to membership. Here, I made more new friends. I eventually joined other clubs of a similar nature so that now I have luncheon every day in the week except Saturday when I go to the Chamber of Commerce. I saw every day men whose businesses were much larger than mine have time to do many of the things I would like to have done and I set to work to build up my business organization to the point that I could be spared. I began placing responsibility on others, and to those who responded to this added responsibility I added to the salary, and those who did not found their places taken by others who would. You can't do all the work yourself.

"From these business men with whom I got acquainted I found out how they arranged their business affairs to have some spare time and I benefitted accordingly. For a time I believed that the money spent in these outside diversions was to be charged to profit and loss, but now I know differently. Both time and money spent should be charged to advertising and I will tell you why.

"During the first six months in the new location, I advertised pretty heavily and naturally got returns. During the next six months the sum appropriated for this purpose was about the same and the returns were about 25 per cent greater. There is no reason why returns from the same amount of advertising should show such an increase in six months for the same amount of money spent and I finally awakened to the fact that many of the accounts were those of the personal friends I had made. That gave me a different insight into the value of personal acquaintance.

"And there is another value it took me months to see; namely, the effect on the employes of being widely known and recognized as a booster. Ideas I picked up here and there over the luncheon table prompted the organization of a bowling team to represent the business, a baseball team, both of which worked wonders toward creating that spirit of co-operation between employer and employe which is so much desired. I have never had any labor dissention since I changed my habits. My employes know that if they have any reasonable adjustments, they will receive a fair hearing and we reason out the matter.

"Here is another thing I discovered later. Organization work among those engaged in my own business is invaluable. Here is another item of minor expense I always used to consider idiotic and therefore never indulged in. Now I know better. I never shall forget the ideas I got at the first trade convention I ever attended. I went with some qualms of conscience over the money it would take, but I came home with the knowledge that the money had been well spent and with the firm conviction that I should never miss another.

"If you charge the money spent and the time lost from business trying to promote the civic good to the advertising account, you will find that the returns are probably greater for the amount invested than returns from display space, though the latter, of

course is invaluable. Both are necessary, for the one ties right up with the other. Then from the selfish side of it purely, remember that anything that helps your particular community helps your particular business.

"Understand I am not trying to advise just how to get this acquaintance, nor am I conceited enough to believe I have found the ideal way, but what I want to get across in this interview is that business will increase in proportion to the number of acquaintances of the personal sort you have. Try it once, and results are certain."

The White Oak Crushed Stone Company, New Britain, Conn., has filed notice of dissolution under state laws.

The Laughlin quarries, near Williamsburg, Pa., recently touched off one of the largest blasts ever attempted in this section. The charge loosened about 100,000 tons of limestone. The company is engaging actively in the limestone district of Blair county, with good production.

The Maurice River Sand Company, Camden, N. J., has been organized with a capital of $100,000 to operate sand and gravel properties in the state. The organizers are I. C. Clow, F. R. Hansel and John A. MacPeak, Camden.

The Riverside Sand & Gravel Company, Newton, Mass., has been formed with a capital of $50,000 to operate a sand and gravel plant in this vicinity. The company is headed by Louis Vassalotti and Cataldo Marchinni, both of Newton.

The Carry Quarry & Construction Company, Fall River, Mass., has filed a corporate statement with the secretary of state, showing assets of $55,368. The company's real estate and machinery are valued at over $11,000.

Lincoln Way Gains

IN Checking the accomplishments at the end of 1920, officials of the Lincoln Highway Association expressed themselves as mightily pleased with the progress made in the improvement of the great transcontinental route during the year passed. Each state traversed by the Lincoln Highway from the Atlantic to the Pacific has done all that it was practically able to accomplish during the year. Nowhere did lack of money hamper the work.

As a result, 548 miles of actual improvement have been added to the great transcontinental thoroughfare. That is 16 per cent of the total length of the road. The money spent in bringing about this construction on the Lincoln Highway in 1920 fell but little short of the total expended in 1919, which represented the high point in cash investment on the Lincoln Way in any one year.

Had it not been for physical handicaps, such as the lack of transportation facilities, the lack of building materials, the high price and prevalent shortage of labor, the condition of the securities market affecting the sale of bonds for road building, and the extreme reluctance on the part of reputable contractors to undertake road work in consequence, it is an assured fact that 1920 would have seen a greater outlay for building the Lincoln Way than any year in the past. Much of the work contemplated for 1920 has of necessity, been carried over into 1921, and accordingly the Lincoln Highway Association is optimistically anticipating a new year of splendid results.

The Quality Sand & Gravel Co., has been formed at Wheeling, W. Va.; capital stock, $50,000; incorporators: R. L. Dowdell, Glendale, W. Va.; R. J. Cotts, Thomas I. Thomas and Edward Burkhart, Wheeling; Charles T. Abrams, McMalion, W. Va.

The Talc Industry in 1920

BY RAYMOND B. LADOO
Mineral Technologist, Bureau of Mines

THE production of talc in 1920 was probably the largest in history. Preliminary reports from ten companies which include most of the large producers indicate an increase of about 26 per cent in tonnage over 1919 and an average increase of 6.75 per cent in price per ton or about 34 per cent increase in total value. If these averages may be accepted for the whole industry a total production of 213,000 tons valued at about $2,360,000 is indicated. These figures may be too high, as production fell off during the last two months, but they serve to indicate the general tendency. The estimated total production for 1919 was 170,000 tons with a total value of $1,766,000. The largest previous production was 198,613 tons in 1917 and the largest total value was $2,089,960 in 1918. Price changes varying from no increase to 25 per cent increase during the year were reported. The largest producers reported little increase in price, as is shown by the 6.75 per cent average.

Imports of talc were larger than ever before. Incomplete reports indicate total imports of more than 24,000 tons valued at over $475,000, which includes about 1,000 tons of crude talc with a value of about $8,000. Imports in 1919 were 14,602 tons valued at $259,004, compared with the previous record tonnage reached in 1916 of 18,882 tons valued at $230,875. The 1920 figures indicate an increase in tonnage of about 40 per cent over 1919 and of about 25 per cent over the previous record. The average declared value of imported talc per ton in 1920 was about $20.00 as compared with about $17.50 in 1919, an increase of 14 per cent. About 70 per cent of the imported talc came from Canada, about 20 per cent from Italy, about 8½ per cent from France, and the rest 1½ per cent, was from England (probably originated in India), Austria, British West Indies, Denmark, Germany and Sweden. The Canadian talc had an average declared value of about $16 per ton, the Italian $35, the French $15, the British (Indian?) $50. From these figures it appears that the chief competition which domestic producers must meet is that of Canadian talc, much of which is of very high grade, suitable for the toilet-powder trade, and which sells for a comparatively low price.

The total indicated consumption of talc from preliminary estimates is summarized below:

INDICATED TALC CONSUMPTION IN 1920

	Tons	Value	Value per ton
Domestic....	213,000	$2,360,000	$11.00
Imported....	24,000	475,000	20.00
	237,000	$2,835,000	$12.00

As indicated by the production figures, 1920 was a very busy year for the talc industry in general. With very little additional plant capacity a record production was made. The demand was very strong up until about November when the general business depression was strongly felt. At the close of the year, new orders were very scarce, production had started to decline and stocks of finished talc in the hands of producers were large and increasing due to the catching up on unfilled orders, and lack of new business. Some producers reported orders booked for over 50 per cent of capacity for 1921, while others reported no orders booked; but a general attitude of optimism for the new year was evident. No general decline in talc prices in 1921 is looked for, as the prices of talc have not largely increased since

1914. The average value of talc in 1920 was only about 13.5 per cent greater than that of 1914. Labor supply was adequate but not plentiful, with wages remaining about the same. Car shortage hampered shipments for over half the year, resulting in the maintenance of many unfilled orders on the books. Numerous inquiries for spot shipments sent to several producers simultaneously, made a further apparent increase in demand. Most of the producers, however, met the demand by increased efficiency and capacity output. A few expansions in capacity were noted but on the whole they were unimportant.

Toward the close of the year the new plant capacity, building or contemplated, amounted to nearly 300 tons per day or 90,000 tons per year. The country probably can not absorb this additional capacity for several years at a normal rate of increase, but new uses which would take care of it might be developed through research and publicity. However, it is not likely that much more than a third of this projected plant capacity will actually be built and placed in operation.

Little progress was made in the development of new uses which would absorb large quantities of talc, most of the production going into the paper, roofing, paint, rubber and textile industries. One previously known use, however, as one of the principal ingredients in fire-retardant paints, received an impetus due to the publication of favorable results of tests on these paints and the licensing of paint companies to manufacture them. This use should call for an increasing quantity of talc in the future.

A meeting of the Talc and Soapstone Producers' Association was held in New York in April, 1920, at which a constitution was formally adopted. Funds were also appropriated for research work, but they have not yet been made available and no further progress in this direction was made.

The opening of no new talc deposits has been reported, but a few old deposits were reopened in a small way. Several small companies went out of business or ceased to produce during the year. Talc specimens from undeveloped deposits, of a grade suggesting possible commercial importance, were received from Virginia, Alabama, Nevada and Montana. It is reported that the Montana deposits will be developed and operated in 1921.

Vermont continued to lead in the production of talc by tonnage and possibly by value with a production of more than 94,000 tons valued at over $830,000. Few new developments were reported, high prices and labor shortage discouraging new building. However, the American Mineral Co., at Johnson, Vermont, has built a new mill increasing its daily capacity from 70 tons to 200 tons. This mill, which is electrically driven, is expected to be ready for production early in 1921. The sinking of a new and deeper shaft at the mine with additional mining machinery is contemplated. No new companies were reported.

The only important development in New York State was the erection of a new talc mill by the W. H. Loomis Talc Corporation on the Edwards branch of the New York Central R. R., about six miles from Gouverneur. This mill is not yet completed, but the company operated its mine during the year, selling crude talc. The Uniform Fibrous Talc Co. continued development work in their new shaft but did not bring their production up to normal. Control of the St. Lawrence Talc Co., whose plant is located at Natural Bridge, New York, passed to the Carbola Chemical Co. with no change in management. Prices of New York talc in general advanced during the year more than in other districts. One producer expresses the opinion that consumers will not be inclined to place long-time contracts in 1921, due to the business depression, and more talc

will be sold on an open order or current price basis.

California stands third in the production of talc in the United States. During the last few years the increase in production has been very rapid, rising from a previous maximum of 1,159 tons in 1912 to 10,364 tons valued at $170,775 in 1918. Figures are not yet available for 1919, but in 1920 one company alone reported a production of about 8,000 tons valued at about $170,000. Most California talc is of high grade and is sold largely in eastern markets to the toilet-powder trade in competition with imported talc. The large increase in freight rates and the increase in imports have made this competition increasingly difficult, and at the close of the year most of the mines and mills were inactive. No large price reductions can be expected, due to the high costs of mining and milling. The use of California talc in paints and as a filler for cotton cloth and paper has largely increased. The development of new deposits at Richardson Siding, near Folsom City, Sacramento County, has been reported.

The production of talc in the Pennsylvania-New Jersey district has always been small and no large increases were reported in 1920. One new company began operations, the Rock Products Co., Easton, Pa., reopening a quarry at Philipsburg, New Jersey.

The talc industry in the south was not very active in 1920. There are no large producers of ground talc in this district, but it supplies a large proportion of the talc crayons used in this country. In Maryland there was no production of ground talc, but a few hundred tons of crude talc were shipped. The Harford Talc Company, Inc., which now mines practically all of the domestic talc suitable for lava gas-tips, etc., continued its production. It is reported that the quality of the talc mined is increasing with depth. A 500-foot span cableway was installed during the year. In Virginia, the property of the Franklin Soapstone Products Co. was sold to the Blue Ridge Talc Co., Inc., who began operations on June 10th. This company produces ground soapstone at Henry, Va., and is planning the installation of a Raymond four-roller mill to provide a greater production of finely ground material. In North Carolina and Georgia the production of talc crayons increased 10 to 20 per cent over that of 1919. Little ground talc was produced. Many of the talc mines of this district are handicapped by their distance from a railroad and the poor wagon roads, making it uneconomical to haul anything but crayons or high-grade crayon stock. In Madison County, North Carolina, a new county road is being graded which will be of great value to the mines near by. The Talc Products Co., at Glendon, Moore County, North Carolina, is contemplating the erection of a modern grinding plant with a capacity of 50 to 100 tons per day. The Georgia Talc Co. reports that they have increased their talc grinding capacity at Chatsworth, Georgia, by the installation of a Fuller-Lehigh mill. Several companies in the Georgia-North Carolina district have been in difficulties, financial and otherwise, which have resulted in low production or closing down. On the whole it was a difficult year for the talc industry of the South; but improvements will come through consolidation, increased capitalization and more careful management. Talc discoveries near Evington, Campbell County, Va., and near Talladega, Ala., which may be of commercial importance have been reported. At the end of the year demand had fallen off greatly both for crayons and for powdered talc, but no price cutting was evident.

Before the war most of the talc imported into the United States came from France and Italy at an average

rate of about 4,000 tons per year from each country. The war caused little difference in these imports, except that those from Italy increased to over 7,000 tons per year, until 1917, when those from France dropped to about 1,500 tons and from Italy to about 4,100 tons. In 1918 the imports from France fell to 22 tons and from Italy to 490 tons. In 1919 there was but a slight increase over 1918. In 1920 the indicated imports from France were about 1,900 tons and from Italy about 4,400 tons. In the absence of definite information it appears that the talc industry in Italy has recovered to its prewar efficiency, while that of France has only partly recovered.

The talc production of Canada has increased steadily during the last ten years and as a large part of the Canadian talc is exported to the United States, the increase can be followed approximately from the imports into this country. Practically all of the talc produced in Canada comes from near Madoc, Hastings County, Ontario. The three companies, George H. Gillespie & Co., Ltd., Madoc, Ont.; Anglo-American Talc Co., Ltd., Madoc, and the Eldorado Mining and Milling Company, Ltd., Eldorado, are producing ground talc. Of these companies the George H. Gillespie Company is probably the largest and ships the highest grade of talc. The mine and mill are efficiently operated and had a prosperous year. It is reported that the erection of a new mill of larger capacity is contemplated. According to reports of the Ontario Department of Mines the Eldorado company does not produce a real talc but an altered silicceous magnesian limestone. A dark gray talc, called "gratalc," is ground in a separate mill.

No important talc production has come from the other provinces in Canada; but it is reported that a large deposit of talc was blocked out by diamond drilling in Quebec, just north of the Vermont line. This work was done in 1920 by a United States company. In British Columbia the British Columbia Silica and Talc Co., Vancouver, B. C., was formed to operate silica and talc mines near Hope, about 100 miles east of Vancouver.

In South Africa there are four districts in which important deposits of talc are found. Two of these, the Barberton district and the Krugersdorf district, are in the Transvaal, the third is in Zululand, and the fourth in Southern Rhodesia. The most important district is the Barberton, though very good foliated talc is found in Southern Rhodesia. The talc reserves in the Barberton district are enormous and could be developed to produce a very large tonnage. In 1920 there were only three producing companies, the Scotia Talc Mine, Ltd., Joe's Luck, Barberton, Transvaal, The Verdite Mine, Jamestown, Barberton, Transvaal, and B. R. Berrett, Greytown, Natal. The first two named are the largest producers, the former having a capacity of 2,000 tons crude talc or 1,000 tons ground talc, per month, and the latter 200 tons ground talc per month. The shipping port for the Scotia mine is Delagao Bay, 120 miles from the mine. While the total talc production of South Africa was only 757 tons in 1919 plus a few hundred tons (412 tons in 1917) of manufactured talc goods the industry seems to have great potential possibilities both for domestic use and for export.—U. S. Bureau of Mines, Reports of Investigations.

The Tucker Sand & Gravel Company of Little Rock, Ark., was recently granted a charter. The capitalization of the new corporation is $100,000 and the following are named as incorporators: S. W. Tucker, H. H. Tucker, E. L. Huddleston, A. L. Matthews, James Jones and Horace Baker.

Fluorspar Industry in 1919-1920

A Summary made for the Bureau of Mines by Hubert U. Davis (in charge fluorspar statistics, U. S. Geological Survey) and Raymond B. Ladoo (Mineral technologist, U. S. Bureau of Mines)

THE Fluorspar shipped from mines in the United States in 1920 is estimated to have amounted to 186,000 short tons, valued at $4,544,000, as compared with 138,290 short tons, valued at $3,525,574, in 1919. These figures show an increase in quantity of 34 per cent and in value of 29 per cent. The shipments in 1920 are about 29 per cent less than the record of 263,817 in 1918, reached under war demand but are greatly in excess of the prewar record of 116,545 tons in 1912.

The general average value per ton f. o. b. mines or shipping points for all grades of fluorspar in 1920 was $24.43, which is $1.06 per ton less than the average value reported in 1919. The highest average value reported in 1920 was recorded in Kentucky, which was about $27 per ton, and the lowest in New Mexico, which was about $17.66 a ton. It should be noted that the differences in the average values reported do not generally represent differences in quality, but differences in freight rates from the mines to the consuming centers, the values given being f. o. b. shipping points. Quoted prices on gravel spar were somewhat lower than in 1919, the price of 85 per cent grade ranging from $22.50 to $27 per ton in the Kentucky-Illinois district. Acid lump spar was greatly in demand at prices from $50 to $60 per ton. The base price of gravel spar for 1920 was reported to be about $5 lower than 1919.

The demand for fluorspar was good the entire year with the exception of January and December, and at times little material was available for attractive deliveries. During the latter part of February a number of contracts expired which together with the depletion of stocks accumulated during the war period, forced many consumers into the market for fresh supplies. In June it was believed that there would be a shortage of spar during the last half of the year and that the price of fluxing material would be advanced. Despite the fact that shipments were being made under difficulty, due to the insufficient car supply, consumers began to press producers for delivery, the tendency on the part of steel makers being to get large tonnages of spar in their bins. No data are available as to the quantity of fluorspar held by consumers at the end of 1920, but it is understood that the start of the present slump left many users with large stocks on hand.

The imports of fluorspar into the United States during 1920 amounted to 24,610 short tons, valued at $265,624; in 1919 they were 6,943 short tons, valued at $107,631. The value at the foreign ports of shipment assigned to the imports for 1920 averaged $10.79 a ton; for 1919 it was $15.50 a ton. The imports for 1920 are greater than in any year since 1913, when they were 22,682 short tons.

The increase in the imports of fluorspar in 1920 can probably be attributed to the difficulty in securing supplies from American mines, due to the insufficient car supply and labor troubles, and to the easing up of the ocean freight situation. Most of the English spar is consumed at steel works in the Lehigh and Susquehanna valleys of Pennsylvania, at which points the foreign material can be delivered at a slight advantage in price on account of a saving in railway freight charges.

According to a consumer in the Lehigh Valley who uses a large quantity of fluorspar imported from England, the foreign spar purchased in 1919 averaged 75 per cent calcium fluoride and 4 per cent silica and the cost delivered at its works was about $7 a ton less than the cost delivered of the domestic spar, which averaged 85 per cent calcium fluoride and 6 per cent silica. This consumer states that the better grades of domestic fluorspar are more efficient than the imported material and that on a fairly even price basis the better grades of domestic spar are preferred.

A consumer in southeastern Pennsylvania who also uses considerable quantities of English fluorspar states that the material imported in 1919 averaged 83 to 87 per cent calcium fluoride and 8 to 10 per cent silica and the cost delivered at its steel plant was about $21 a ton.

Small quantities of fluorspar have been imported into the United States from Canada prior to 1919, the largest being in 1918, when 913 tons was reported, practically all of which was obtained from Ontario. During 1920 the imports increased to 7,068 tons, a considerable portion of which were fluorspar concentrates from the Rock Candy mill in the Similkameen district, British Columbia, which were shipped to steel plants at Gary, Ind. Small quantities of fluorspar were received from Germany, British South Africa, and Australia during 1920.

Outlook for 1921

At the close of 1920 very little new business was being booked, although some of the larger producers were still running to capacity on old contracts. For most of the smaller mines the market was stagnant. While in general an optimistic view is held, especially in the west, there are several disturbing features. One is that the imports for 1920 were large and increasing toward the end of the year. While Canadian competition has been small it will probably increase. In order to equalize the price of imported and domestic spar the principal fluorspar producers recently presented a petition to the Ways and Means Committee of the House of Representatives to increase the import tariff from the present rate of $1.50 to $5 per long ton.

Another factor of some importance in the early part of 1921 will be the fact that many steel producers have accumulated large stocks of fluorspar which will be used up but slowly until the present industrial depression ends. It is also possible that many consumers will withhold contracts with the expectation of lower prices. However, no tendency toward any price reductions on gravel spar have been noted.

There seems to be a tendency, particularly among western producers, to specialize on high-grade fluorspar such as used in the acid, glass, and enamelware industries. This is due, no doubt, to the apparent scarcity of spar of these grades during 1920 and to the fact that the item of freight cost is relatively lower on material of high grade. It should be remembered that the consumption of fluorspar of these grades is small in comparison with that of gravel spar and any considerable increase in the production of these grades would result in an oversupply with a consequent reduction in price.

The Warsaw Sand Company, Warsaw, Ind., has sold its holdings in the plant near Winona Lake, to the Western Indiana Gravel Construction Company.

The Hendrick Manufacturing Company, Carbondale, Pa., announces that it has opened a Pittsburgh office, 915-916 Union Bank Building.

What About Highways?

Present Bright Outlook for This Class of Work as Seen in Washington

By Our Washington Correspondent

ALTHOUGH the bill introduced by Representative Sells, of the House Committee on Roads, providing $100,000,000 for Federal road aid during the fiscal year beginning July 1, passed the House with a big majority, the bill had up to this writing failed to pass the Senate, with the prospects rather dimmed for passage at the session just ending. There is belief, however, that the bill will be passed at the extra session of Congress expected to be called by President Harding early in April. If that is done there will still be time enough to make it operative for the next fiscal year.

After passing the House, Senator Swanson, of Virginia, made an unsuccessful effort to pass the bill through the Senate. Seeing that its chances were slight, due to the jam of legislation during the last days of the session, Senator Swanson offered the bill, as it passed the House, as an amendment to the Post Office appropriation bill, but, as an amendment, it failed to receive the approval of the Senate and the Post Office bill was passed without it, which left the road bill on the calendar. Had it passed as an amendment to the Post Office bill, it would have been accepted by the House, for that body had already gone on record as being in favor of it.

The road bill, as it passed the House, and as it was presented as an amendment to the Post Office bill, provides that the $100,000,000 appropriation be expended in accordance with the road aid act of 1916, and that $3,000,000 additional be appropriated for national forest roads and trails. The appropriation for national forest roads and trails is made available until expended by the Secretary of Agriculture "for the survey, construction, and maintenance of roads and trails within, partly within, or contiguous to the national forests when such roads or trails are necessary for the use and development of the resources of the national forests or desirable for their proper administration, protection, and improvement or for the extension of important main highways."

Despite the fact that the road aid bill has not at this time gotten through Congress, with Secretary Meredith, of the Department of Agriculture, urging upon Congress an extension of the Federal aid road building program, and with forty legislatures now in session, and considering among other things, state road-building programs, the indications are that 1921 will be the banner year in American road building. Numerous meetings to promote the construction of good roads were held this winter, and are being held this spring, in all parts of the country. The enormous appropriations for highway work already made by states and municipalities—appropriations that total more than $1,000,000,000 covering bond issues and direct levies for highway construction and road maintenance—presage for the next five years an unprecedented volume of road building, according to the Department of Agriculture. The $271,000,000 voted in bond issues or appropriated by eight states recently, added to the bond issues passed by eight other states since 1918, makes $543,800,000 already available for road work in sixteen states. Funds available through Federal aid are placed at $160,000,000. In addition, funds obtained from direct levies and other sources of state revenue and county issues are estimated to amount to $296,200,000.

In his recent report to the President, Secretary Meredith expressed the hope

that Congress would at once provide additional funds to be expended under the terms of existing legislation, with certain modifications, at the rate of $100,000,000 a year for a period of five years, beginning with July 1, next. Congress has thus far failed to meet this request, however. "The fact that the present appropriations may not be entirely expended by the end of the fiscal year, does not lessen the necessity of immediate action," the Secretary emphasized in his report. He also urged haste upon Congress that the Federal and state highway departments might know as promptly as possible the program for the next five years, to the end that the work may be adequately planned and the engineering and administrative details carefully executed.

Development in recent years in highway transportation equipment has created a phenomenal demand for adequate highway construction and this consequently calls for a larger number of competent road engineers. There are now said to be 2,500,000 miles of rural highways in the United States, and it is believed that highway appropriations will continue to increase during the next five years. Estimates made by the Bureau of Roads, Department of Agriculture, disclose the fact that in Federal and state highway work alone, exclusive of that carried on by cities, counties and townships, there are now required 122 chief executives and administrators, 360 division engineers, division chiefs of bureaus, division chiefs of highway departments, 3,680 supervising engineers and chiefs of party and 6,350 junior engineers, rodmen, chainmen and draftsmen.

In connection with the employment of this number of men, it will be recalled that one of the strongest arguments advanced for road building at this time is that it will give employment to thousands of unemployed men. Two years ago when Congress was approached for $200,000,000 additional under the provisions of the Federal road aid act it was set forth that this money, which called for an equal amount from the several states, would serve to carry on road building and absorb the surplus labor which it was anticipated would result from the abrupt conclusion of the war. But the period of non-employment did not arrive, besides which there was difficulty in obtaining materials, and their shipment and the abnormal prices cut down very substantially new road mileage. Present indications, however, are that the supply of labor in the near future may considerably exceed the demand, and hence a recourse to important public improvements would be a direct means of stabilizing labor conditions.

Every kind of road costs about twice as much to build now as it did in 1917, according to the Bureau of Roads, though this cost may be reduced this spring and summer. In 1920 highway construction suffered more than any other class of work through railroad congestion, strikes, labor troubles, and material shortages. After the war there was a great public demand for improved roads. Many roads had been seriously damaged by war traffic, but there was a pronounced scarcity of labor and construction materials. According to the Bureau sand, gravel, stone and cement increased in price between 1917 and 1920 from 50 to 100 per cent. Naturally, these increases in cost were reflected in the prices paid to contractors for road work. As funds available for road construction are largely limited by statute, or by the returns from taxation, a majority of the states last year deliberately withheld work, the plans for which had been completed, until they could obtain a greater return for their expenditure.

Gov. Charles H. Brough, president, and J. A. Roundtree, director general of the United States Good Roads Asso-

ciation, have issued a call that the ninth annual convention of the association meet in Greensboro, N. C., April 18 to 23, inclusive. Organizations and individuals interested in good roads have been requested to appoint delegates or attend the convention, which, it is said, promises to be the most important good roads convention that has been held in this country since the good roads agitation was started. Already many distinguished men have accepted invitations to attend, it is said, and participate in the deliberations of the convention. The association has members in every state in the union.

In connection with the convention, the United States good roads exhibit will be held, which will be confined to many new types of road building machinery and highway transportation equipment, road materials, machinery and equipment used in the construction and maintenance of roads and pavements. A select number of automobiles, trucks and tractors also will be shown. The Bureau of Roads has been requested and is expected to have an exhibit that is worthy of the Government. During Good Roads Week, the Bankhead National Highway Association, which has members in thirteen states, will hold its fifth annual convention in Greensboro. This association expects to have at least 1,000 delegates. Invitations have been extended to other highway and subsidiary organizations to hold meetings and conferences during the week.

The Rockland & Rockport Lime Company, 45 Milk street, Boston, Mass., has perfected plans for the erection of its proposed new lime plant at Rockland, Me., to consist of five lime kilns, gas producer works and general manufacturing department. The main building will be one-story, 35x100 feet, with two-story structure, adjoining, 60x108 feet.

Good Roads Show

Huge Success—Much Good Will Result From Open Discussion of Problems

THE National Good Roads Show opened its doors at Chicago, February 9, to the largest crowd ever assembled for an affair of th kind. Every conceivable type of r chine necessary to road construc was on exhibit, and the exceedin good advertising campaign conduc by President M. J. Faherty and hi committees, brought visitors from parts of the country.

The list of speakers was unusually good, and included many nationally prominent men. The entertainment committee left nothing to be desired on the part of out of town visitors.

The exhibits were mighty interesting and instructive. Some of the more prominent ones were:

Austin Western Road Machinery Co.
Austin Machinery Corp.
Hadfield-Penfield Steel Co.
Marion Steam Shovel Co.
Victor R. Browning
Easton Car & Construction Co.
Koppel Industrial Car & Equipment Co.
Gruendler Pat. Crusher & Pulv. Co.
Sauerman Bros.
Overland Crane Co.
L. P. Green
The Heil Co.
Jeffrey Mfg. Co.
Fate-Root-Heath Co.
J. F. Byers Mach. Co.
Northwest Engineering Works
Thew Shovel Co.
Portable Conveyor Co.
Chalmers & Williams

Altogether, the affair was undeniably a success, and will undoubtedly help to stimulate road building in this country, and will bring closer together the users and the manufacturers of road-building machinery.

The officers of the Medford Washed Sand and Gravel Company are: E. M. Sabin, president; A. A. Thompto, vice-president; Iver Iverson, treasurer; R. M. Weblemoe, secretary-manager.

Progressive Market Tone

Signs in New York Point to Reduced Building Costs for This Year

Various symbols in the building material market show that the change that has been felt in the building industry since February 1 has the elements of progressive development, says the Dow Service Daily Building Reports, speaking particularly of the New York situation.

Cement production for last year was 109,302,000 barrels, more than ever before recorded for this industry in America. Shipments for the country were 96,329,000 barrels, valued at $193,548,000 compared with 80,769,378 barrels manufactured and 85,596,616 barrels shipped and valued at $146,656,076 in 1919. These totals represent a 24 per cent gain in production in 1920, 13 per cent gain in shipments and 31.9 per cent in value of shipments. The stock of finished cement increased from 5,852,407 barrels at the end of 1919 to about 8,290,000 barrels at the end of 1920, or approximately 41 per cent. The average factory price in bulk at mills for the whole country was $2.01 a barrel in 1920 as compared with $1.71 in 1919, an increase of 17.5 per cent. These are advance figures supplied by Ernest F. Burchard of the United States Geological Survey, Department of the Interior.

Current reports in the cement department of the building material market indicate that one company is contracting for cement to run throughout the year, another company is asking 10 cents a barrel more for deliveries extending beyond April 1 while other companies are asking 5 cents a barrel more, which is giving rise in the market to the impression that in view of the low supply on hand present price levels may not be long sustained.

Gravel, grit, sand, crushed stone and all concrete ingredients have held rigidly on price practically all winter, but the market is expecting a spring reaction reflecting the lowering cost of fuel. Many of the sources of supply are drawing upon stocks laid up when manufacturing costs were much higher and when spring production is resumed lower prices may be looked for.

Hollow tile and all fireproofing products have dropped in price so that they are being offered at a margin so close to cost as to preclude much hope for further reduction. The inquiry has improved, manufacturers say, within the last ten days, but the market is still spotty.

Labor is sharing the conciliatory policy of materials. Iron workers have gone back to work at rates lower than they asked for. In Newark the demand for higher wages were finally waived. Local rock men, drill runners and tool sharpeners have expressed a willingness, according to the Contractors Protective Association, to work for $4.80 instead of $6.00 per day for unskilled labor, $6.25 instead of $7 for rockmen and $7.50 instead of $8 for drill runners, blacksmiths and tool sharpeners in the trade. These rates will continue for the remainder of the year unless conditions warrant reestablishment of the old rates.

Although only ¾ to 1½ per cent of the cost of the entire average building is represented by lime this commodity is getting ready for a big buying movement. The only question is where the market will develop. Paper, leather, agriculture and other industries have become such large users of lime that it is a question as to whether there will not be a return of upset delivery schedules for those who do not get their orders in early this year. Lime companies are taking business as liberally as offered from whatever section it comes from and most of the inquiry is coming from sections outside of New York metropolitan districts. New England, for instance, may soon have the lion's share of N. Y. district lime output for the first half of the year if the proportion of incoming orders keeps up.

Money is easier to obtain since building materials have shown a drop of 49.6 per cent since October and are practically at 1919 spring levels and labor is everywhere showing conciliatory moods. Where contractors reported bricklayers operating on an 800 to 900 basis in 1918, Ralph P. Stoddard, Secretary of the Common Brick Manufacturers Association, reports that they have been laying on an average of over eleven hundred per day. Builders this spring look for a fifteen hundred per day average. It is being said in financial circles that with United States Victory loan 4¾'s nearing par and the spring building season developing with such advantages

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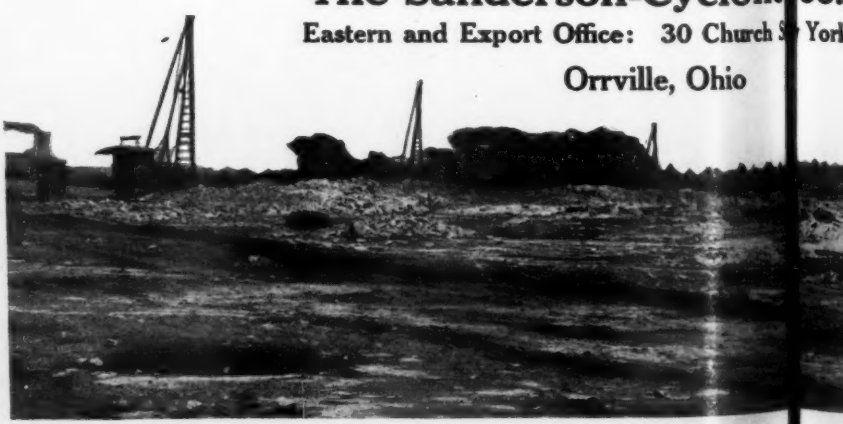

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offering those early entering the market, that a wholesale unloading of bonds with which to finance building operations, there would be danger of greater unsettlement than there would be if the normal channels of building loans were opened up to prospective builders. In the event of heavy Liberty bond selling, just before maturity, the lending institutions might be looked to to support the market.

Plaster has shrunk to bottom levels. The next move probably will be upward.

It is not at all probable that building material prices will be advanced this year beyond the 1920 level. All factors in the market give this assurance with hardly an exception. But they also say that prices will not drop below the 1919 spring level. For the first half prices will skirt the 1919 range, but as the year passes its half-year turn there will be outreaching toward the 1920 price basis.

William R. Elden has joined the organization of Sauerman Bros., Chicago, as engineer in charge of designing and specifying power equipment for Sauerman dragline cableway excavators and Sauerman bottomless power scrapers. Mr. Elden is well qualified for his new duties through 14 years experience as sales-engineer for the Lidgerwood Mfg. Co., manufacturers of hoisting engines. He is a graduate of Purdue University and a member of the Western Society of Engineers.

Pawling & Harnischfeger Co., excavating machinery builders of Milwaukee, have just published for distribution a new edition of Bulletin 5X on the P. & H. Excavator-Crane No. 205. This bulletin describes the many and various uses of this general utility crane, the photographic illustrations showing the excavator at work equipped with a digging bucket, a back-filling scraper bucket, clam shell bucket, lifting magnet, special grappler for lumber, sling chains. Details of construction, specifications and operation are also included.

A merger has been effected between the New Martinsville Sand Company and the Corliss Sand Company, both of Martinsville, W. Va., under the first noted name. The consolidated company will operate with a capital of $150,000.

E. C. A. Booklet

Jos. V. Sullivan, of the Equipment Corporation of America, has sent us from his Chicago office the first copy of a new booklet which the company is issuing. This piece of literature is well calculated to fulfill its purpose, which is, as stated by Mr. Sullivan, to demonstrate the following points:

(1) We have the plants necessary for rebuilding equipment.

(2) That we have the necessary equipment to economically handle this product.

(3) That we have the machine shops, blacksmith shops, etc., necessary to successfully rebuild equipment.

(4) That our stock is so big that a contractor can usually get exactly what he wants.

(5) The testimonial letters prove that we do have the stock and that it is really and truly rebuilt.

(6) The guarantee on the last page should remove all doubt in the prospective purchaser's mind.

The Fate-Root-Heath Company, Plymouth, Ohio, manufacturers of the Plymouth Gasoline Locomotive, have just issued an elaborate booklet showing the use of this locomotive for handling materials on road construction. It has proven itself especially adaptable to this class of work, and has found wide use for this purpose.

Copy of the booklet will be sent to any reader of PIT AND QUARRY on request.

C. T. Cohee, C. B. Outtem, and S. L. Mackay, of Wilmington, Del., have organized the Golden Gravel Company, with a capital of $50,000.

The Climax Stone Company and the Ingalls Stone Company, both of Bedford, Ind., have filed preliminary certificates of dissolution.

The Fay Sand & Gravel company of Chisholm, Minn., has been incorporated by William E. Fay, George Trask, both of Chisholm, and capitalized at $25,000.

The Jeffrey Manufacturing Co., Columbus, Ohio, announces the removal of its Denver office from the First National Bank Building to 421 United States National Bank Building, of that city.

Discuss Michigan Rates

Effort Made to Reduce Cost of Road Construction in That State

SAND and gravel freight rates increased in Indiana, 95 per cent; in Illinois, 102 per cent; in Michigan, 139 per cent."

This, in brief, was the picture drawn by George J. Bolender, manager of the traffic bureau of the Kalamazoo Chamber of Commerce, during a hearing at Lansing before the Michigan Public Utilities commission on the united petition by officials of every county in the state asking relief from these apparently extortionate rates. Mr. Bolender officially represented Kalamazoo, Cass, Calhoun, Eaton and Muskegon counties and other counties were also represented.

Taking 17 counties as a sample, Mr. Bolender pointed out to the commission the extreme importance of the freight rates on sand and gravel in road construction. In these counties, he showed, 29 roads with a total mileage of 110 miles, were planned for the spring. On these alone, according to the figures he produced, the total freight charges, excluding all cases where local material will be used, will be $465,472.47 on the basis of the rates now in force. This reveals an average freight cost of $4,231.57 for each of the 110 miles. These figures, he added, do not include freight charges on cement.

In 1914 the basic freight rates in Michigan on intrastate traffic in sand and gravel were 30, 40 and 50 cents. Under the rates now in force these are, respectively, 84 cents, 98 cents and $1.12. Applying these locally on the lowest rates, it was added, a shipment between Kalamazoo and Vicksburg, which was subject to a 30 cent rate in 1914, and would now come under the 84 cent rates.

Mr. Bolender told the commission that in many cases the new rates per ton on sand and gravel were in excess of 3 cents a mile. Drawing a comparison, he said it would cost more to move an average car containing 50 tons of sand and gravel one mile than it would cost to move the same distance a passenger car with 50 passengers. Pointing to the difference between the two classes of transportation in the cost of equipment, risk, etc., Mr. Bolender insisted that this inequality made apparent the gross injustice complained of by the petitioners.

Entering the subject of railroad revenue in bulk, Mr. Bolender produced another set of figures showing that the moving of 2,424 carloads of sand and gravel prior to the increase in rates Aug. 26 last yielded a total revenue of $96,000, an average earning per car of $39 for an average distance of 42 miles. Moving 1,042 cars after Aug. 26, he added, yielded the railroads $99,000, an average per car of $68 for a distance of 51 miles. He emphasized the fact that while less than half the number of cars were moved in the latter instance than in the former, the total railroad revenue was swelled by $3,000.

The Union Stone Company, operating a quarry near Mount Wolf, Pa., is curtailing operations and the working force has been decreased. Full production will be resumed as soon as market conditions warrant.

Both the Atlas Portland Cement Company and the Lehigh Portland Cement Company, operating in the vicinity of Allentown, Pa., are working under regular production at their mills, and there is no evidence of any immediate curtailment. These plants have a combined capacity of about 40,000 barrels of cement under normal operation.

Lime Production Up

Value of 1920 Output Ahead of Any Previous Year

ABOUT 3,350,000 short tons of lime, valued at $33,518,000, was produced and sold in the United States, including Porto Rico and Hawaii, in 1920, according to an estimate made by Herbert Insley of the United States geological survey, department of the interior, from figures furnished by the principal producers.

The quantity reported is more than that produced in any year since 1917 and is 9 per cent more than that produced in 1919. It does not, however, quite equal the average prewar production. The value of the lime produced in 1920 is considerably more than the value in any previous year. The average value per ton in 1920 was $10, in 1919 it was $9.50 and in 1918, $8.36.

Of the forty-two states and territories that produced lime in 1920, thirty-two increased the output and only seven decreased it as compared with 1919. Three states made about the same production as in 1919.

The sales of hydrated lime in the United States in 1920, amounting to 846,000 short tons, were the greatest yet recorded, being 10 per cent more than those in 1919, the previous record year. Twenty-eight states produced hydrated lime in 1920, one more than in 1919. Of these twenty-eight states, twenty-one produced more lime than in 1919, six produced less, and one made about the same production. Several states made very notable increases in their production of hydrated lime in 1920.

Vermont made the greatest increase, 77 per cent, and Alabama came next with an increase of 61 per cent. In 1919 Maryland made the greatest percentage increase in the production of hydrated lime, but in 1920 its output decreased 9 per cent.

The strong demand for chemical lime during the war fell off soon after the armistice was declared. In the last half of 1919, however, the demand began to increase, and in 1920 it was as good as the demand for building lime, if not better. Michigan, Vermont, Indiana, Virginia and West Virginia, most of whose lime output is sold for chemical uses, reported a much larger demand for chemical lime. Many producers found themselves unable to supply the demand owing to shortage of labor and cars.

Producers of agricultural lime reported that the demand in 1920 was about the same or slightly less than in 1919. Lime for other uses was ordered so heavily that some producers found it impossible to fill orders for the cheaper agricultural lime. The production of burned lime for use in agriculture has decreased steadily since 1914, and the indications do not point to any early change for the better.

The Eastern Limestone Corporation, affiliated with the Eastern Potash Corporation, 120 Broadway, New York, has arranged for a bond issue of $400,000, the proceeds to be used for proposed expansion and general business operation. The last noted company has construction well under way on a new plant at New Brunswick, N. J., for the manufacture of potash for chemical and agricultural purposes; it is also building a new chemical works in this vicinity. The limestone company has a tract of over 160 acres of land, estimated to contain 100,000,000 tons of high grade lime rock. It will furnish all the material required for the New Brunswick works of the parent organization, estimated to average about 1,500 tons of material daily. Waldemar Schmidtmann is president of both organizations.

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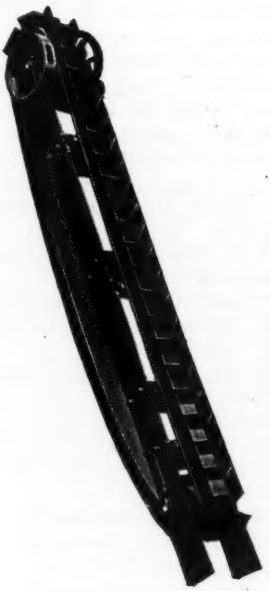

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BUCKETS—standard types in steel or malleable iron, steel buckets of special design made to your specifications.

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Recent Patents

The following patents of interest to readers of this journal recently were issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C., at the rate of 20 cents each. State number of patent and name of inventor when ordering.

1,358,837. Pulverizing-mill. James W. Fuller, Catasauqua, Pa.

1,358,984. Mining-machine. Nicola Pedulla, Macdonaldton, Pa.

1,359,126. Coal-cutting machine. Alexander Stevenson and Arthur Logan, Glasgow, Scotland.

1,359,237. Excavating-machine. Benjamin F. Du Pont, Dania, Fla.

1,359,582. Method of and apparatus for back-filling. Lloyd A. Dolton, Chicago, Ill., assignor to Weller Mfg. Co., same place.

1,359,615. Stoneworking-machine. Eugen L. Muller, Schoenberg, and Fritz Siegheim, Wilmersdorf, Germany.

1,360,011. Reciprocating rock-drill for supplying water to the bore-holes during drilling. William E. Nettle, Paul Selby, James Blythe, and Joseph H. Holman, Johannesburg, Transvaal, South Africa.

1,360,116. Jig for separating coal and the like material from foreign matter. Charles V. King, Shenandoah, Pa.

1,360,475. Excavating apparatus. William M. Venable, Pittsburgh, Pa., assignor to Blaw-Knox Co., same place.

1,360,681. Excavating apparatus. Joseph L. and Joseph LeR. Potter, Indianapolis, Ind.

1,360,906. Sand-screen. Horatio S. Earle, Detroit, Mich.

1,360,929. Rotary Screen. Achilles C. Gough, Pocatello, Idaho.

1,360,997. Shoveling-machine. Frank H. Armstrong, Vulcan, Mich.

1,361,054. Cage-adjusting mechanism for crusher-machines. William H. Hartman, Philadelphia, Pa., and George W. Borton, Haddonfield, N. J., assignor to Pennsylvania Crusher Co., Philadelphia, Pa.

1,361,679. Reducing-mill. Edward B. Campbell, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., same place.

1,361,734. Mine-drill. John Katulka, Nanticoke, Pa.

1,361,821. Conveyor-chain. Robert E. Briggs, Columbus, Ohio, assignor to Jeffrey Mfg. Co., same place.

1,361,849. Loading-machine. Robert P. Greenleaf, Cleveland, Ohio.

1,361,904. Dump-car. Jay B. Rhodes, Kalamazoo, Mich., assignor to Western Wheeled Scraper Co., Aurora, Ill.

1,361,996. Heading or tunneling machine. Henry Hirst, Dewsbury, England.

1,362,056. Excavator. Halver R. Straight, Adel, Iowa.

1,365,748. Excavator. Dawson H. Thorn, Jonesboro, Ark.

1,365,815. Apparatus for separating materials of different specific gravity. Thomas Charlton, Chicago, Ill.

1,365,881. Mining-machine. Albert Ball, Claremont, N. H., assignor to Jeffrey Mfg. Co., Columbus, Ohio.

1,366,096. Mining-machine. Clarence V. Perry Percy, Ill.

1,366,142. Mine-trolley. Robert G. Wilson, Davis, W. Va.

1,366,985. Crusher. Carl A. Wendell, Rockville Center, N. Y.

1,367,160. Radial excavator. David C. McDonald, Hammonton, Cal.

1,367,777. Apparatus for crushing ores and other material. Harry W. Hardinge, New York, N. Y.

1,367,907. Hoisting and conveying device. Donald S. Andrews, Cleveland, Ohio.

1,368,189. Coal-digger. John Newark, Coral, Pa.

1,368,232. Dumping car. Carl P. Astrom, East Orange, N. J., assignor to M. H. Treadwell Co., New York, N. Y.

1,368,267. Gravel-cleaning apparatus. John S. G. Lamb, Jr., Kansas City, Mo.

1,368,289. Bucket-carrying apparatus. Charles C. Post, Winthrop Harbor, Ill., assignor to Frederick C. Austin, Chicago, Ill.

1,368,372. Dump-car. Ellis W. Test, Michigan City, Ind.

1,368,456. Coal-handling device. William Robertson, Chicago, Ill.

1,368,521. Cutter-chain mining-machine. Matthew S. Moore, Glasgow, Scotland, assignor to Marvor & Coulson, Limited, same place.

Road Prospects Cheer

Kentucky Making Plans for Early Delivery of Materials on Extensive Building Program

By Our Louisville Correspondent

STATE Highway Engineer Jos. S. Boggs recently made a detailed report on road building funds and road building prospects in the state which shows that there will be $7,118,573.53 for road work exclusive of maintenance. In other words, there is that much to be used in the state this year, and he figures that it is sufficient to finance all the building it will be practical to do during the year.

Of this sum there is now available a little better than two million dollars for use in building 304 miles of road —that is, additional roads, roads not already under contract.

This is one of the best signs of the times for the quarry operators and also the sand and gravel people —the prospects for the year in road building and the fact that quite a lot of the funds are already available, and plans are going on nicely to get the work started just as early as the roads will permit.

Local people are concerning themselves considerably now with a proposed Louisville-Cincinnati highway for which some funds had already been raised, but the project was then disapproved by the Federal engineers and Federal aid was stopped. A local delegation from the Louisville Board of Trade has appealed to the State Highway Commission and the Commission promised to do everything it can to get Federal aid for carrying out the project to build a highway on the Kentucky side from Louisville to Cincinnati.

As to immediate activity among the stone people, the weather has been tempting but it is considered too early yet to start spring work.

R. B. Tyler of Louisville says that while they are still working right along out at Hodgensville they have not started up their local quarry operations here but hope to start as soon as they feel that spring is really here. There seems to be plenty of prospective business in highway construction but what there may be doing in the way of railway ballast seems to be held in suspense until the railroads get their financial affairs in better shape and so re-adjusted all around that they can actively push road improvement.

Some springlike weather started the local sand and gravel business to budding out and also brought some carlot business from out in the state. While this is taken to be a temporary pick-up inspired mainly by a spell of mild weather, it is cheering, however, because it may be taken as a sign of what to expect when spring does open. The indications are that we will have an excellent season in the local trade as well as out through the state, and that there will be a goodly share of building as well as a lot of highway construction.

The E. T. Slider Co., for a few days in the middle of February enjoyed quite a noticeable pick-up in sand and gravel in their local trade, and also received carlot orders from out in the state.

The Nugent Sand Co., which has been busy rebuilding its burned elevator, report that the mild weather has enabled them to make splendid progress and that at this writing the structure proper is up and they are beginning to put in machinery and equipment. They have made such good progress that they feel happy in the thought that reconstruction work will be completed before the time for the spring seasons' operations.

Indiana Road Matters

Legislature Has Numerous Measures Before It Affecting Highways

By Our Indianapolis Correspondent

A STATEMENT was made by Governor McCray recently that he has no definite highway program in mind other than that expressed in his message in which he urged an improvement program consistent with the times. Rumors have been afloat for several days that the Governor was behind a house bill which would increase the state highway fund levy from 3.9 cents on each $100 of taxable value to 20 cents. However, it is learned that the Governor has not yet determined how far it would be wise to go into road building under present high taxes and the high cost of road material. If the legislature kills the house bill the 10-cent levy will prevail in 1922, but if the 20-cent figure is changed to some other figure, it would prevail over the automatic 10-cent levy on which 1922 taxes would be collected. This 10-cent levy would give the department approximately $5,810,000 in 1922 according to the estimate. A 20-cent levy would enable the department to build roads in 1922 of about 400 miles. The department will receive federal money equal to the amount it expends under certain specifications.

It is probable that the Indiana state highway levy of 10-cents, as now provided by law, will not be changed by the present legislature. The success or failure depends largely on the attitude of Representative James M. Knapp, of Wayne county, who has a bill pending in the house committee on roads which would eliminate the present method of distributing automobile license fees and cause them to revert to the counties, instead of going in a lump sum to the state highway fund for the construction and maintenance of roads. The new plan does not include the passage of the Knapp bill but provides for the sidetracking of the Anderson bill which would raise the state highway levy from 10 cents to 20 cents on each $100 of taxables. Lack of change in the law would not necessarily mean, however, that there would be no change in the amount of money to be obtained by the state highway commission for the construction or repair of roads, but would mean an increase in the amount of money for the use of the state highway commission which would total approximately $8,000,000. The 10-cent levy was passed during the 1919 legislative session which was reduced by the state tax board to 3.9 when valuations were increased and the 10-cent levy automatically becomes effective again if there is no action taken by the present legislature. The 1919 session also enacted a law providing that money obtained through the payment of license fees, amounting to about $2,500,000 annually, shall go to the state highway commission for highway purposes. The old law provides for the distribution of this money among the counties on a threefold basis. One-third was divided on a basis of improved gravel roads in the county, one-third equally among the counties and the other third on a basis of automobile registration in the county.

The Steele joint senate resolution was killed in the senate recently. This resolution called for an investigation in Indiana of the activity of the "so-called building trust" by a legislative committee. The motion was offered to postpone the resolution indefinitely by Senator Furnas, after Senator Oscar Ratts, of Paoli, the Republican floor leader, attacked the resolution when it was called up on third reading by Senator Steele. The

resolution carried no appropriation; it provided no authority to subpoena witnesses and would take five men out of the legislature where they are needed. Senator Ratts said that there are laws on the statute books to get at what Senator Steele complained of and that the attorney-general could make an investigation. It is easy to make or break a contractor by providing material to him at different prices from those to his competitor when prices are controlled, according to the statement made by Senator Steele in urging the adoption of his resolution, and the practice raises taxes, halts road building, prevents honest competition and keeps prices up. He said ordinary construction was impossible because the word competition had been stricken from the builders' supply industry in this state. The Steele resolution proposed that a committee of senators and representatives make inquiry into the prices of lumber, cement, sand, gravel and other building materials and to ascertain whether a trust does not control prices. Senator Steele offered to amend his resolution to meet objections offered by Senator Ratts and Senator Furnas, but the senate voted to kill the resolution.

The first step taken toward lowering wages of the men in every department of the stone industry was at a meeting recently of the Bedford Stone Club, Bedford, Ind. Resolutions were adopted to the effect that the prices of building material were forced to a point where it was impossible for prospective builders to obtain money to build during the war due to wages being raised to an abnormal level, and as there is now a reduction in living costs, it is necessary to reduce labor costs also.

The Griffith Sand and Gravel Company of Griffith, Ind., has been organized with a capital stock of $20,000. The company plans to purchase or lease immediately gravel deposits and will begin production soon.

Articles of incorporation have been filed by the Albany Lime Stone Company of Albany, Ind., showing capital stock of $15,000. The company plans to enter the stone quarrying business and has as its directors, Geo. McGinley, Claude A. Burdick and Arthur W. Lockhart.

Will Keep Check on Law Makers

THE Indiana Sand and Gravel Producers Association has appointed a legislative committee, to keep in touch with all bills introduced during the present session of the state legislature which affect the building material interests, either directly or indirectly.

This committee will, through the association office, keep the members advised from time to time regarding bills pending.

In making the announcement regarding the work of this committee, R. C. Yeoman, Extension Engineer, writes to the members as follows:

It is of vital importance that each individual producer take it upon himself to write his respective Senator and Representative and also each member of the committee to which the bill is referred, approving or disapproving any of the bills.

It is also extremely important that you get others in your vicinity who are not engaged in the material business, particularly influential business men and farmers whom you may be able to influence to do likewise.

Your committee will make comments, expressing what in their opinion is to the best interest of the industry, as well as what will be detrimental.

In writing your senator or representative, always mention the number of the bill to which you refer, and state whether it is a Senate or a House Bill. The number and title of each bill will be given in our Bulletins, which will be issued as often as your committee deems expedient.

Marine Insurance

This Subject Being Given Much Attention by Missouri Valley Association

THE Missouri Valley Association of Sand & Gravel Producers is developing considerable interest in the matter of mutual marine insurance, following the expression which was given to this subject at the annual convention in December.

The advantages of mutual marine insurance, as developed at the meeting, are many and manifest because:

1st: It forms a basis of close cohesion and understanding among the industries.

2nd: It allows a certain sum to be charged off annually on income tax returns on account of this insurance, which is an item of some importance to these returns.

3rd: The cost of operation will be very low and the benefits accordingly will go back to the industries.

4th: Last, but by no means least, the plan will furnish insurance that otherwise cannot be had at the present time, which all agree, is absolutely vital to the industries.

As a result of the agitation at the annual convention, a committee on marine insurance was formed, composed of R. J. Stuart, C. E. Todd, and F. A. Laughead. This committee has already conferred with competent authorities on this subject, and has considered all phases of the question in considerable detail.

Briefly summed up, the general plan of the insurance is as follows, if organized under the laws of Missouri, which are liberal in this regard:

1st: There must be not less than thirteen directors, no fewer than seven of whom shall be residents of Missouri.

2nd: Companies doing business in other states may come into Missouri to form or be insured in this Mutual Company.

3rd: The Mutual plan may also be extended profitably to fire insurance.

Premium notes may be used instead of cash for the premiums; the notes to be a first lien upon the property insured, the notes to be given for not more than $500,000 each and for not more than five annual premiums. In addition to these notes, where the notes would be for less amount than the premium for the insurance desired, a cash premium may be put up for the difference.

A guaranty fund of not less than $50,000 is required to be contributed to by no fewer than ten persons no one of whom shall contribute more than 20 per cent thereof, which must be placed with the superintendent of insurance before beginning business. This guaranty fund may consist of a wide range of securities, including cash, bonds (both private and municipal) mortgages and similar securities.

Sauerman Brothers Standardize Power Scraper Installations

Sauerman Brothers, engineers and manufacturers, 312 South Dearborn Street, Chicago, have perfected several different types of installations for their bottomless power scrapers, and standardized them for use in sand and gravel pits, stripping, and general excavating work.

They have had exceptionally good results during the past year, and have found that best service and maximum efficiency are obtained when the proper double-drum hoisting engine, blocks, sheaves, wire rope and anchorage are assembled in a complete installation to fit certain peculiar conditions and requirements.

Sauerman standardized installations are in use by a large number of commercial sand and gravel producers who have had remarkable success with them.

The company has recently issued a new pamphlet, No. 12, which will be sent to interested parties on request.

Link-Belt equipment assures success and satisfaction. The Link-Belt plant of the Continental Asphalt & Petroleum Co., Dougherty, Okla., is shown above.

It is provided with two excavators, which deliver to the same hopper. Three grades of sand and two of gravel are produced.

Link-Belt engineers are constantly solving sand and gravel handling problems. Let them help you. Write for catalog No. 440.

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LINK-BELT

SAND AND GRAVEL PLANTS

New Austin Gasoline Shovel

From the Austin Machinery Corporation comes an announcement of unusual interest. An event which they had long hoped for has come to pass—the perfection of a thorough going, practical gasoline shovel.

This is in no sense a makeshift adaptation of the steam shovel idea, but an entirely new design, built "from the ground up" for gasoline operation.

Patented air-controlled clutches enable operators to manipulate the principal operations with ease. The cushion-drive clutches of swinging and crowding devices satisfactorily insure the necessary overlapping of operations. All operations may be quickly reversed at any time. The swinging machinery and hoisting drum are locked by means of automatic brakes when the power is shut off.

New Explosive That Cannot Freeze

The Atlas Powder Company, Philadelphia, Pa., has succeeded in producing a non-freezing explosive, the qualities of which are of such a distinctive type, that it is bound to be welcomed eagerly by all blasting operators and especially by those who do cold weather blasting.

Briefly, the qualifications of Atlas Non-Freezing may be stated as follows: (1) Five grades for every blasting requirement; (2) Cannot freeze at any temperature; (3) Withstands the heat of summer; (4) Its stability avoids premature explosions (nothing weaker than a No. 6 Blasting Cap should be used to detonate it); (5) Will not cause headaches to those who use and handle it; (6) Made in all standard size cartridges.

The Atlas Powder Company makes every effort to bring about maximum results in the use of explosives and is pleased to meet the particular needs of individual concerns, no matter how unusual conditions are. It is advised that every concern consult the Atlas Service Division and receive, as a result of this co-operation, the Proper explosive for their blasting requirements.

Southern Distributors

The Austin Machinery Corporation announces the formation of the Austin Machinery Corporation of Louisiana, incorporated under the laws of that state for the purpose of acting as sole distributors of Austin Machinery in the states of Louisiana, Arkansas, Mississippi and Tennessee.

This new corporation will carry a full stock of machinery and spare parts for this territory.

The offices are at 1020 Maison Blanche Building, New Orleans, La.

Three New Bulletins

Victor R. Browning of Cleveland, Ohio, designer and manufacturer of many forms of material handling machinery, has just issued three new bulletins in a series covering his numerous lines.

These three bulletins cover the subjects of Locomotive Cranes, Crawler Cranes and Crawler Shovels. Each one goes into considerable detail in describing the particular product represented, so that a user of this class of machinery can tell almost at a glance just which size and type of machine will best suit his purpose.

These bulletins will be sent to any one interested, by addressing the company, Lock Box 27, Collingwood Station, Cleveland, Ohio.

Scraper Conveyors

The Jeffrey Manufacturing Company, of Columbus, Ohio, has just published an elaborately prepared catalog of 84 pages, covering "Jeffrey Standardized Scraper Conveyors".

The catalog shows by illustrations, the various types of these conveyors and the numerous industrial uses to which they can be put.

They appear from this book to be easily adaptable to almost any material handling problem.

The Rock Products Company, Sugar Land, Tex., recently organized with a capital of $100,000, is planning for the operation of large sandstone properties at Rock Junction, La. L. S. Bourne and R. P. Eldridge, both of Sugar Land, are president and secretary, respectively.